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DISEASES CAUSED BY BACTERIA AND FUNGI.

I. Edwards, P. R. (1935). **The Serological Differentiation of Hemolytic Streptococci of Human and Animal Origin.**—*Res. Bull. Ky agric. Exp. Sta.* No. 356. pp. 18. 2 tables. [Numerous refs.]

II. Kalweit, K. (1935). Vergleichende Untersuchungen über das morphologische und biologische Verhalten der aus der Milch, dem Euter und den supramammären Lymphknoten galtkranker Kühe gezüchteten Mastitis-streptokokken. [**Characteristics of Mastitis Streptococci**].—*Inaug. Diss., Hanover.* pp. 39. 1 table. [Numerous refs.]

III. Bryan, C. S., & Turney, G. J. (1936). **A Sequel to a Public Health Ruling concerning Streptococcic Mastitis.**—*Amer. J. publ. Hlth.* **26.** 517-520. 2 tables. [1 ref.]

I. Streptococci of human and animal origin can be differentiated by precipitin tests [*V. B.* **4.** 199.] and Edwards finds that the results obtained by him are in agreement with the conclusions already reached on biochemical grounds [*V. B.* **4.** 408]. *Str. equi* and Types A and B (fermentation reaction) of animal streptococci all fall into the same serological group. In four instances Type B was isolated from human sources, but Type A never. Seven strains said to be of animal origin belonged to the human type, four of these being isolated from the udders of cows involved in septic throat epidemics, and three from the respiratory tract of chicks.

II. The author states that the streptococci responsible for mastitis can be differentiated on cultural grounds into two types, *viz* :– (1) a " typical " type which produces α or γ haemolysis on blood agar, rough colonies on litmus-lactose-agar, clear supernatant colonies in broth, and which acidifies litmus milk, and (2) an " atypical " type of *Str. agalactiae* described by Seelemann [*V.B.* **2.** 423.] with the same haemolytic characteristics, but giving rough colonies on litmus-lactose-agar, turbidity in broth, and only slight acid production in litmus milk. Morphologically, this second type occurs in short chains or as diplococci.

It would appear that the " atypical " type has the greater pathogenic properties, for in some cases it could be isolated from the supramammary lymphatic gland. In six cases of mastitis where septicaemia was present, " atypical " types were isolated from the blood stream.

III. The method adopted for the eradication of mastitis from dairy herds is indicated, and the subsequent improvement in the raw milk supply discussed. The advantages of the scheme for producers are pointed out.—N. J. Scorgie.

Laktionov, A. M., & Posrednik, F. J. (1935). Materiali k biologii sibirejazvennoi paločki. [**Control of Anthrax**].—*Sovyet. Vet.* No. 12. pp. 43-47. [French summary].

The authors, as the result of their experiments on birds of various kinds, guinea pigs and horses, arrived at the following conclusions :– (1) anthrax bacilli cannot be attenuated by passage through slightly receptive or non-receptive animals ; (2) methylene blue, potassium bichromate, yperite and arsenic have a marked effect upon the morphology and viability of the anthrax bacillus, and (3) filtrates of sporulated cultures will not immunize guinea pigs against an injection of Tsenkovskij's vaccine.

I. Panisset, L., & Jalabert, E. (1936). A propos de la tuberculose apicale. Localisations tuberculeuses chez les animaux adultes de l'espèce bovine. [**Apical Tuberculosis. Tuberculous Localization in Adult Cattle**].—*Bull. Acad. vét. Fr.* **9.** 211-212.

II. Chicon, F. (1936). Le règlement d'administration publique du 29 septembre 1935 sur la prophylaxie de la tuberculose des bovidés. [**France – Law of 29.9.1935 on the Prophylaxis of Tuberculosis in Cattle**].—*Rec. Méd. vét.* **112.** 350-355. [Also appeared in *Rev. Abatt.* **23.** 1-5].

III. Edwards, S. J. (1936). **The Eradication of Bovine Tuberculosis. Further Results.**—*Vet. Rec.* **48.** 561-566. 2 figs., 2 tables. [4 refs.]

IV. —. (1936). **Eradication of Tuberculosis.**—*Ibid.* 569.

I. In the examination of 30 sets of lungs affected with tuberculosis in adult bovines, 3 cases showed lesions exclusively in one lobe ; in 19 cases lesions existed in either the right or left lobe and lesions were also scattered throughout the lungs. In 18 of the 30 cases there were no lesions in apical lobes, but lesions existed throughout the other lobes of the lungs. In 8 of the 30 cases there were no lesions in the apical lobes, though there were old-standing lesions, varying from the size of a nut to that of an egg, irregularly distributed in the lungs.

The authors conclude that in pulmonary tuberculosis of adult bovines there is no indication of any predisposition to any one lobe : tuberculous lesions are usually irregularly spread throughout the lungs.

II. The law of France, in connexion with the prevention of tuberculosis, requires notification of suspected disease to be given to the veterinary department. By this means the veterinary inspector is enabled to examine the sanitary conditions of the housing, the water supply for cattle, the percolation of drainage from infected premises and the general conditions of the farms in which disease is found. The law also deals with the cost of tuberculin testing, the cost of compensation paid for destruction of reacting animals and the cost of disinfection and hygienic alteration of buildings for cattle.

III. In continuation of work begun in 1929 by Jordan [*V. B.* **4.** 310.], the author gives the latest results of control of tuberculosis in the herds, showing the progress made since 1929.

By April, 1935, there were 23 clean herds and two more expected to become clean very soon, leaving five herds in which no progress had been made at all, the percentage of reaction having only fallen from 50 in 1929 to 40 in 1935.

The effect that this local eradication scheme is having upon herds in the vicinity of the controlled area is discussed. It is considered that the nucleus of tuberculosis-free herds is having a very favourable effect on the surrounding country.

Summary of Results in Experimental Area.

	First Test, Autumn, 1929.	Seventh Test, Autumn, 1932.	Present Test, Spring, 1935.
25 herds showing consistent improvement.			
No. tested...	1,198	1,322	1,372
Reactors	241	87	15
Percentage of Reactors ...	20·1	6·6	1·1
5 herds showing no consistent improvement.			
No. tested...	277	309	274
Reactors	143	125	110
Percentage of Reactors ...	51·6	40·5	40·2

IV.—An annotation of III.—Brennan DeVine.

I. Müller, M. (1935). Blutuntersuchungen bei tuberkulösen Rindern. [**The Blood Picture in Bovine Tuberculosis**].—*Inaug. Diss., Hanover.* pp. 56. 3 tables. [19 refs.]

II. LESKIEN, Irma. (1935). Fettgehalt der Organe bei Tuberkulose des Rindes. [**Fat Content of Body Organs in Bovine Tuberculosis**].—*Inaug. Diss., Hanover.* pp. 40. 2 tables. [Numerous refs.]

III. EHRLICH, C. (1936). Kann Eutertuberkulose am Zellbild der Milch erkannt werden ? [**Demonstration of Tuberculosis of the Udder by the Cell Content of Milk**].—*Z. InfektKr. Haustiere.* **49.** 97-104. [4 refs.]

IV. KUHLMANN, H. (1936). Die diagnostische Auswertung des Zellbildes der Milch bei der tuberkulösen Euterentzündung des Rindes. [**Diagnostic Value of the Cell Picture in Tuberculous Mastitis**].—*Munch. tierärztl. Wschr.* **87.** 229-233. 16 figs. on 4 plates. [Numerous refs.]

I. 75 tuberculous bovines were subjected to the following tests and the results recorded : erythrocyte count, differential white cell count, haemoglobin estimation, albumen and globulin content and ratio, and corrosive sublimate test. Cows with advanced open tuberculosis showed varying degrees of erythropenia. While the white count was unchanged, the albumen : globulin quotient was lower than in animals showing slight tuberculous lesions, though the total protein content was unchanged. [The statistical significance of the foregoing differences is doubtful].

II. Tissue from the lungs, liver, kidneys and myocardial and skeletal muscles of six normal bovines (age 4-6 years), and of 13 tuberculous bovines (aged 4-12 years) was examined histologically for fat by cutting sections and staining them with haemalum-eosin, sudan III, scharlach-R, and nile blue sulphate. The difference between healthy and tuberculous animals as regards fatty change was largely one of degree, particularly in the case of the lungs, liver and kidneys. In the adrenal bodies there was definitely more evidence of fatty change in the tuberculous animals. In particular, the cortical zone of such animals showed it to a considerable extent, whilst in the normal animals no such change was visible.

III. Leucocytes are difficult to identify in milk, owing to degeneration changes, the presence of fat and debris etc., whilst even in good microscopic preparations of milk deposit the differentiation of monocytes and epithelial cells may present difficulties. The average differential cell counts in tuberculous milk are 6·5 per cent. of lymphocytes, 35 per cent. of polymorphs, 55 per cent. of monocytes and 3·5 per cent. of epithelial cells. The average count in milk from cases of streptococcus mastitis is 6·5 per cent. of lymphocytes, 68·8 per cent. of polymorphs, 22·4 per cent. of monocytes and 2·3 per cent. of epithelial cells. The monocyte/polymorph index is 1·57 per cent. in the case of tuberculous mastitis and 0·33 per cent. in the case of other types of mastitis. Where good microscopic preparations are available this M/P index is of diagnostic significance. The presence of endotheloid cell groups is pathognomonic for tuberculous mastitis.

IV. Very close agreement is reported between the results obtained by examining samples of suspected milk in accordance with the following methods :- microscopic examination of deposit for Langerhan's giant cells, examination for tubercle bacilli by microscopic and biological means and the examination of whey by the complement-fixation test. Giant cells were found in 106 out of 199 samples, and all of these samples were shown to contain tubercle bacilli. In 11 further samples the presence of tubercle bacilli was demonstrated. Positive serological reactions were obtained in 129 cases, but the presence of specific antibodies is not necessarily indicative of a tuberculous udder.—E. J. PULLINGER.

DE SCHRYVER, A. (1936). Arrêté ministériel concernant les associations de lutte contre la tuberculose bovine. [**Decree regarding Control of Bovine Tuberculosis (Belgium)**].—*Bull. Off. internat. Epiz.* **11.** 894-900.

The conditions under which state aid is given to groups of farmers willing to eradicate tuberculosis from their herds are laid down. Veterinary practitioners carry out the technical work. Tuberculin tests followed by the removal of reactors have a place in the scheme.—J. E.

I. Friedmann, F. F. (1935). Ueber Heil- und Schutzimpfung der menschlichen und tierischen Tuberkulose, ihre Leistungsfähigkeit und ihre Grenzen. [**Therapeutic and Preventive Vaccination against Human and Animal Tuberculosis**].—*Schweiz. med. Wschr.* **16.** 1099-1101. [Num. refs.]

II. Branch, A., & Enders, J. F. (1935). **The Immunization of Guinea Pigs with Heat-Killed and Formol-Killed Tubercle Bacilli.**—*Amer. Rev. Tuberc.* **32.** 595-600. 3 tables.

III. Derick, C. L., Branch, E. A. G., & Crane, M. P. (1935). **An Attempt to "Desensitize" Tuberculous Guinea Pigs with Dead Vaccine and Products of the Tubercle Bacillus.**—*Ibid.* 218-228. 4 tables. [10 refs.]

I. A brief review of some of the relevant literature with special reference to Friedmann's turtle strain vaccine [*V. B.* **4.** 699]. [It is generally agreed by unbiassed observers that Friedmann's vaccine has little or no immunizing power].

II. Guinea pigs were inoculated with tubercle bacilli which had been killed by heating in a saline suspension at 65°C. for four hours; others received formolized vaccine. Treatment consisted of the administration of three successive doses. More guinea pigs showed positive reactions to the intradermal inoculations of tuberculin following intraperitoneal vaccination, than to vaccination by other routes. There was a test for immunity a month after vaccination by inoculation with doses of 1,000 virulent organisms (subcut.). All the immunized animals and non-immunized control animals subsequently died, but increased resistance to infection was judged by longer survival. Vaccinated animals survived 120 to 180 days longer than controls. Animals strongly allergic as the result of vaccination were as susceptible to virulent infection as those which were only slightly skin-sensitive. This is considered to be evidence that allergy and immunity are unrelated.

III. By inoculating tuberculous guinea pigs with killed tubercle bacilli their allergic reactions to tuberculin were reduced in intensity. The average survival period of these guinea pigs was lengthened beyond that of others which received the same original infective dose, but no vaccine. This is further evidence that a high degree of allergy and strong immunity are not closely related.—E. J. Pullinger.

Feldman, W. H. (1936). **The Recovery of Virulent Tubercle Bacilli from the Tissues of Swine Intended for Food.**—*J. infect. Dis.* **59.** 43-49. 1 table. [9 refs.]

Over 5 million of 45 million pigs (11 per cent.), slaughtered in the U.S.A. in 1934 and inspected by federal meat inspectors, were tuberculous, 40,000 animals showing wide-spread lesions leading to total condemnation of the carcasses. The vast majority of carcasses were passed for consumption after the removal of local lesions.

F. set out to find whether or not tissues, remote from the lesions, of such pigs contain virulent tubercle bacilli, and he made cultures from the left precrural or right iliac lymph nodes of 101 such pigs, finding viable bacilli in four of them; they were all avian type strains.

[The lymph nodes used as above were all normal to naked eye examination but cultures were not prepared from the visibly affected lymph nodes].

Similar work of other persons is reviewed.—J. E.

I. Saenz, A., & Costil, L. (1935). Recherches sur les variations biologiques et la dissociation du bacille tuberculeux aviaire. **[Biological Variations and Dissociation of the Avian Tubercle Bacillus].**—*Ann. Inst. Pasteur.* **55.** 518-546. 2 figs. [Numerous refs.]

II. Rhines, C. (1935). **The Persistence of Avian Tubercle Bacilli in Soil and in Association with Soil Microorganisms.**—*J. Bact.* **29.** 299-300. [1 ref.]

III. —. (1935). **Human Infection by the Avian Tubercle Bacillus.**—*Amer. J. publ. Hlth.* **25.** 1038-1039. [3 refs.]

I. This is a study of certain specific characters of the smooth, rough and chromogenic forms of the avian tubercle bacillus, those described by Winn and Petroff. F.S., the fourth described by them, is not considered in this paper, the authors regarding it as merely an accidental form of S. In the experiments described five strains of avian tubercle bacilli were employed, the method of isolation of the three variants from each strain being given in detail.

The observations recorded cover a wide field and reference to the original article will be necessary for a proper appreciation of the work. The following, however, indicates the nature of the more important results obtained and the conclusions formed :- On isolation S is the predominant form met with. On cultivation the bacilli dissociate into three varieties, S, R and Ch and these characters are maintained when the changed cultures are passed through experimental animals. R is the most stable variant. S is less acid-fast than R. S is very pathogenic for the fowl, the rabbit and the mouse ; R almost avirulent for these animals. The lesions induced in the fowl by S, R and Ch are quite distinct from one another. The alteration in virulence noted in laboratory strains of avian tubercle bacilli is explained by the fact that S, the predominant variety on isolation, is replaced by R in the course of sub-cultivation. Inversely, R may with difficulty be made to give place to S. In either case the change is one of transformation, not one of mutation.

II. The purpose of the experiments described in this paper was to obtain information regarding the probable death rate of tubercle bacilli in soil. In the first series of experiments described, a culture of avian tubercle bacilli was inoculated into heat-sterilized soil (1) alone and (2) in association with pure cultures of soil organisms *viz* bacilli, actinomyces and fungi. The results indicated that, in general, the association of these organisms in soil did not effect multiplication of the tubercle bacilli except the fungus, which had an inhibitory effect, especially in manured soil. In the second series of experiments a heavy suspension of avian bacilli was added to a sample of (1) toluol-sterilized soil and (2) unsterilized soil. In both cases the death rate of the organism proved to be slow.

A method of isolating tubercle bacilli from highly contaminated material is described, involving treatment with alkali and culturing on glycerol agar containing crystal violet.

III. This is a short editorial article in which the possibility of human infection by avian tubercle bacilli is reviewed and available evidence on the subject summarized. The authenticity of the majority of the reported cases is questioned. The ingestion of infected milk, eggs and meat is considered to be the method by which human beings might be exposed to infection. There is a note on Branch's study of the literature of reported cases and his indications for clinical diagnosis of the condition in human beings. The writer deprecates the diagnosis of cases of infection with this particular organism in the absence of adequate bacterial study. Where evidence of the condition appears to be authentic, the indications are that a low grade infection only is produced. The incidence in England, America and Germany, of avian tubercle bacilli in "store" and "dairy" eggs, in the eggs of tuberculous fowls, in milk, in cattle and in pigs is reviewed.—C. Davenport.

DELAPLANE, J. P., ERWIN, L. E., & STUART, H. O. (1936). **The Isolation of a Hemophilic Bacillus in Pure Culture and the Reaction of Chickens to Extranasal Inoculation thereof.**—*J. agric. Res.* **52.** 377-383. [7 refs.]

In the diagnosis of fowl coryza [*V. B.* **6.** 737 and 793.], it is important to take material for culture at the right time, which the authors state to be 24 hours after the development of the oedematous swellings of the face. Material from older lesions is often sterile. In an outbreak it is advisable sometimes to infect fresh birds by intranasal instillation of unfiltered nasal exudate and to secure material for culture from them.

Cultures of *Haemophilus gallinarum* caused coryza when inoculated subcutaneously into the wattle or elsewhere in test birds, but an interval of about three weeks occurred before the nasal cavities showed changes. Birds inoculated intraperitoneally also developed coryza, after an interval of nine days.

By filtering nasal exudate and infecting birds, the disease can be differentiated from the virus type of coryza described by BEAUDETTE and HUDSON.—J. E.

SCHALM, O. W., & BEACH, J. R. (1936). **Cultural Requirements of the Fowl-Coryza Bacillus.**—*J. Bact.* **31.** 161-169. 3 tables. [17 refs.]

The authors give a brief description of the bacillus of fowl coryza which has been isolated from affected poultry in the United States of America.

They studied the cultural characters of the organism, with special reference to the possibility that it belongs to the haemophilic group.

In studies of eight strains it was found that the X and V growth factors [DE BLIECK, *V. B.* **6.** 793.] are necessary for growth and the authors agree with ELIOT and LEWIS that the organism belongs to the genus *Haemophilus*.—C. V. W.

HELLESNES, P. (1936). Pasteurellose hos storfe. [**Haemorrhagic Septicaemia in Cattle in Norway**].—*Skand. VetTidskr.* **26.** 225-240. 1 table. [12 refs.] [English summary].

This article is a communication from the State Veterinary Clinic, Oslo, in which the author records an outbreak in a herd of cattle of a highly fatal disease which on closer examination proved to be a pasteurella infection. It is the first official report of an outbreak of this disease in cattle in Norway.

The causal organism was found to be closely related to, although not quite identical with, the reindeer pasteurella described by MAGNUSSON. Furthermore, it had a closer resemblance to the species described from abroad than to the common swine plague organism found in Norway. It produced indol in Triebler's trypsin broth and with acid formation, and fermented dextrose, lactose, sacharrose, mannite, laevulose, sorbite and mannose, but not dulcite, maltose, arabinose, adonite, erytrite, ramnose, galactose or xylose.

Transmission experiments in two cows were successful by intratracheal and subcutaneous inoculation, the two animals dying of the pectoral and oedematous forms of the disease respectively, whereas infection did not follow ingestion of diseased materials or cohabitation. Serum from a recovered cow protected mice against artificial infection.—GUSTAV NAERLAND (OSLO).

DOMANSKI, E. (1936). Próby podskórnego oraz doustnego uodporniania kur zawiesina zarazka cholery drobiu, poddana dzialaniu zieleni malachitowej i brylantowej. [**Subcutaneous and Oral Immunization of Fowls with *Pasteurella aviseptica* Treated with Malachite Green and Brilliant Green**].—*Wiad. weteryn.* **18.** 102-104. [3 refs.] [French summary].

The author tested the results of immunization against fowl cholera with

vaccines introduced and recommended by SMIRNOV and ROMANOV, attenuated with malachite green or brilliant green, and states that the method is of no value. MANNINGER'S opinion that *Past. aviseptica* is only a facultative parasite may be questioned, as the birds fed with infective material died with typical symptoms of fowl cholera in from 48 to 72 hours.—K. SZCZUDLOWSKI (Lwów).

TULCINSKAJA-TKACENKO. (1934). Sravitelnoe izučenie immuniteta pri cholere kur, vakcinirovannich formolvakcinoi i vakcinami iz kultur AS, ubitich anilinovimi kraskami. [**Vaccination against Fowl Cholera with Formolized Vaccines and with *Pasteurella aviseptica* Cultures Killed by Aniline Dyes**]. —*Sovyet. Vet.* No. 10. pp. 46-48. 3 tables. [French summary].

The author studied the comparative merits of various vaccines against fowl cholera. She tested (1) a formol vaccine ; (2) a crystal violet vaccine ; (3) a methylene blue vaccine, and (4) a malachite green vaccine.

24 healthy hens were inoculated (subcut.) in the breast – 6 with 1 c.c. of crystal violet vaccine, 6 with 1 c.c. of formol vaccine, 6 with 1 c.c. of methylene blue vaccine, and 6 with 1 c.c. of malachite green vaccine. After an interval of 5 days a second dose (1·5 c.c.) of the appropriate vaccine was administered to all. All the hens inoculated with the crystal violet vaccine survived ; 3 of those inoculated with the methylene blue vaccine and 3 of those inoculated with the formol vaccine survived. All the hens inoculated with the malachite green vaccine died.

Six months later the hens which had been inoculated with the crystal violet vaccine, and the survivors from the formol vaccine group were inoculated with 1 c.c. of a 24-hour broth culture, solution 1 : 1,000, of *P. aviseptica*. The vaccinated hens all lived. The controls died in 24 hours.

PROKHOROV, A. V. (1935). Svolobraznij chroničeskij pasterellez petuchov i kur (opuchanie serezek) i ego lečenie. [**Chronic Pasteurella Infection of Fowls**]. —*Sovyet. Vet.* No. 5. pp. 70-73.

A brief general account of the condition, containing nothing new.

I. JANSEN, J. (1936). Eendenkuikensterfte door S. typhi-murium en S. enteritidis var. Essen. [**Salmonella Infections in Ducks**].—*Tijdschr. Diergeneesk.* **63**. 140-142. [English, French and German summaries].

II. JANSEN, J. (1936). Factor XIII van S. enteritidis var. Essen en zijn invloed op de snelagglutinaties in de praktijk der eendensalmonella bestrijding. [**Serological Diagnosis of Duck Paratyphoid with *S. enteritidis* var. *Essen* Antigen**].—*Ibid.* 599-603. 4 tables. [9 refs.] [English, French and German summaries].

I. Death in ducklings due to salmonella infection of the eggs laid by ducks infected with *S. typhi-murium* or by *S. enteritidis* var. *Essen* are reported. The latter infection was also observed in fowls on a farm where the ducks were infected with the same organism.

II. The antigenic formula of *S. pullorum* should be IX, XIII, of *S. enteritidis* var. *Essen* IX, XIII, g, o, m and of *S. typhi-murium* IV, V, XIII, i, 1, 2, 3. Three antigens are used for the diagnosis of duck paratyphoid by the rapid agglutination method, and as a double positive agglutination is sometimes found, the presence of an extra antigenic factor XIII is proved. This was mistakenly designated by KAUFFMANN in writing of some other salmonella as factor XII. BRILL had already used the number XII for *S. abortus equi*.

—M. J. J. HOUTHUIS (ROTTERDAM).

CIUCA, M., MESROBEANU, Lydia, & BADENSKI, G. (1936). Variantes microbiennes du bacille d'Aertrycke et variabilité possible dans la constitution chimique de l'antigène somatique complet de ce germe. [**Variants of *Salmonella typhi-murium* and Possible Variations in the Chemical Constitution of the Somatic Antigen**].—*C. R. Acad. Sci., Paris.* **202.** 1314-1316. [3 refs.]

BOIVIN and his colleagues have shown that a smooth (S) strain of *S. typhi-murium* (*Bact. aertrycke*) contains an " antigène complet " which is specific and toxic and yields on hydrolysis 40 per cent. of sugar and 21 per cent. of fatty acid. This chemical constitution is practically constant. The rough form (R) does not contain this antigen.

The present work concerns the production of colonial variants of a smooth strain of *S. typhi-murium* after having been grown in the products of its own metabolism for a considerable time. A detailed account of one variant only is given. This variant gave a smooth colony, was agglutinated in small granules by " trypaflavine," and its " antigène complet " consisted of 21 per cent. only of sugar and 31 per cent. of fatty acid.

These two antigens, from the parent and variant strain respectively, contain the polysaccharide, which is the specific portion, and the fatty acid, but in varying proportions, and it is considered that the proportions in any variant are determined by an enzyme capable of splitting this type of antigen and previously described by BOIVIN and MESROBEANU [(1935). *C. R. Soc. Biol. Paris.* **118.** 1671].—R. L.

I. JIRKA, F. J. (1936). **Brucellosis in Cattle and Swine as a Public Health Problem.**—*Vet. Med.* **31.** 51-53. 1 photograph.

II. YAPP, W. W. (1936). **Viewpoints from the Dairy Industry on Bang's Disease Control.**—*Ibid.* 54-55. 1 fig., 1 photograph.

III. RUSHE, H. A. (1936). **Viewpoints from the Dairy Industry on Bang's Disease Control.**—*Ibid.* 56-58. 1 photograph.

I. Jirka gives a brief history of brucella infection. Methods of infection and symptoms in various species are mentioned. From 1927 to 1935, 499 cases of undulant fever in man were reported to the Illinois Department of Public Health. There were 27 deaths. The incidence of the disease and the method of diagnosis are discussed.

The Division of Animal Industry of the Department of Agriculture carries out tests on cattle and swine. The amount of compensation for destroyed reactors is not considered to be sufficient to encourage the work of eradication.

II. Yapp gives a summary of the opinions of several dairymen on the practical aspect of bovine contagious abortion, and attempts to assess in detail the losses in the reacting portion of a herd. In the discussion a Guernsey breeder indicated the difficulties which he encountered in building up an abortion-free herd.

III. Rushe gives the results of a survey of the quality of raw milk sold in Illinois, excluding large cities. Fat content and solids not fat were determined. Bacterial counts, tests for *Bact. coli* and streptococci, and the agglutination test for *Br. abortus* were made. The view is expressed that there is ample scope for the veterinary control of milk supplies in unsupervized areas.—F. H. MANLEY.

THOMSEN, A., & RISLAKKI, V. (1936). Reaktionsfrekvensen för abortinfektion hos slaktboskap i Danmark och Finland. [**Incidence of Brucellosis in Denmark and Finland**].—*Skand. VetTidskr.* **26.** 321-328. 5 tables. [5 refs.] [English summary].

In an attempt to calculate the incidence of bovine contagious abortion in Denmark and Finland, about 1,000 blood samples obtained from cows intended

for slaughter were examined in each of these two countries. Agglutination titres of 1 : 20 and higher were regarded as positive reactions. In Denmark, the percentage of positive reactions varied, according to the different abattoirs, between 21·5 and 35·4 (average 27·46), and in Finland between 3·5 and 14·3 (average 5·8). —Gustav Naerland (Oslo).

Bakker, S., & Soeparman, R. (1936). Over een uitgebreid onderzoek naar het voorkomen van infectieuze abortus in het district Grati van het regentschap Pasoeroean. [**Brucellosis in the Grati District of East Java**].—*Ned.-ind. Bl. Diergeneesk.* **48.** 16-30. 2 tables. [7 refs.] [English summary].

It was believed that the cattle in the district of Grati were heavily infected with *Br. abortus*, but when 2,078 animals, mostly cross-bred Dutch cattle, were subjected to the agglutination test, only 12 gave a positive reaction (0·571 per cent.). —M. J. J. Houthuis (Rotterdam).

I. —. (1936). **Brucellosis.**—*Quart. Bull. Hlth Org. L.o.N.* **5.** 184.

II. Thornton, E. N. (1936). **Malta Fever in South Africa.**—*Ibid.* 185-186. 1 table.

III. du Toit, P. J. (1936). **Brucella Infections from the Public Health Point of View.**—*Ibid.* 187-190.

These three papers are in the brucella group of the papers on animal diseases communicable to man, discussed at the Pan African Health Conference at Johannesburg, 20th to 30th November, 1935.

I. The conference resolved that further research on the relation between brucellosis in animals and in man, and the relation between the different types of brucella is desirable.

II. This is a brief review of undulant fever in South Africa. A table shows the incidence of the disease in the various States of the Union from 1920 to 1935.

III. This article reviews the brucelloses of man in comparison with those of domestic animals, the relationship of the various brucella types to infection in man and the chief aspects of brucellosis as a public health problem.—C. V. W.

I. Higginbotham, Margaret, & Heathman, Lucy S. (1936). **Precipitin and Complement-Fixation Reactions of Polysaccharide Extracts of Brucella.**—*J. infect. Dis.* **59.** 30-34. 3 tables. [17 refs.]

II. Lisbonne, M., & Roman, G. (1936). Recherches sur la différenciation des brucella par le milieu de Petragnani. [**Differentiation of Brucella with Petragnani's Medium**].—*Rev. Microbiol., Paris.* **2.** 57-61. 2 tables. [3 refs.]

III. Lisbonne, M., & Seigneurin, R. (1936). Charge électrique et minéralisation des formes virulente et avirulente des *Brucella*.—[**Electric Charge and Chemical Composition of Virulent and Avirulent Forms of Brucella**].—*C. R. Soc. Biol. Paris.* **121.** 1049-1050. [2 refs.]

I. Polysaccharide extracts of *Br. abortus* were studied to ascertain their value as antigens in diagnostic serological tests. The need for research in this direction arises from the unsatisfactory results of serological tests used for the diagnosis of undulant fever in human beings. Polysaccharide extracts were prepared by Avery and Goebel's method, omitting precipitation with trichloracetic acid. The product was washed by redissolving it in hot water and reprecipitating it with alcohol eight times. The ultimate product gave a positive Molisch and a negative biuret reaction. The following conclusions were reached with regard to the extract :– (1) the polysaccharide precipitin test had no advantage over the normal agglutination test, but it was infinitely more expensive, and (2) slight antigenic differences were

demonstrated between strains. Three out of seven smooth strains gave positive precipitin reactions with the homologous antiserum only.

II. It is claimed that by cultivating *Br. melitensis* and *Br. abortus* on Petragnani's medium, the organisms can be distinguished from one another in 95 per cent. of instances. Petragnani's medium should be prepared with " bacto-peptone " and Mercks malachite green. The strains to be typed are grown for two days on glycerin agar and a saline emulsion of this growth is seeded on to the special medium. *Br. melitensis* grows readily and *Br. abortus* barely or not at all. When compared with Huddleson's dye method there was disagreement between the results of only 7 out of 130 strains.

III. Virulent smooth and avirulent rough strains of *Br. melitensis*, and the bovine and porcine strains of *Br. abortus* were examined, 7 strains being used. The electrophoretic rate was found to be slow for the smooth virulent strains and much more rapid for the rough avirulent ones. With both smooth and rough strains the rate was slower for *Br. melitensis* than for bovine or porcine strains of *Br. abortus*. —E. J. Pullinger.

Margani, G. (1935). Sul comportamento delle brucelle nei terreni all'uovo. [**Behaviour of Brucella in an Egg Medium**].—*G. Batt. Immun.* **14.** 1112-1118. [English, French and German summaries].

The author gives details of experiments made by a number of Italian investigators, with a view to differentiating the various types of brucella. Petragnani's, Petrov's, Hohn's and other egg media were used. de Santis, one of the investigators, stressed the importance of the temperature of solidification of the medium, and attributed the discordant results obtained by some of the investigators to a solidification at temperatures over 85°C.

The author's own experiments with egg media led him to the following conclusions :- (1) Petragnani's medium is the best for the differentiation of *Br. melitensis* from *Br. abortus* : the former develops abundantly on this medium, while the latter does not develop at all ; (2) *Br. melitensis* gives a dark brown growth and the medium as a rule becomes dark green, but is sometimes unchanged and occasionally yellow, and (3) the bacteriostasis of *Br. abortus* on this medium is due to the albumen (in egg and milk). To secure inhibition of *Br. abortus* on a glycerinated broth-whole-egg medium, the proportion of egg albumen in the medium must be 1 : 3.

Kien-Hun, B., & Wang Kan. (1935). Ueber die Methylen blaureduktion durch Bact. abort. infectiosi Bang und Bact. melitense. [**Methylene Blue Reduction by the Brucella Group**].—*Z. Hyg. InfektKr.* **117.** 399-402. 2 tables.

The enzymes of *Br. abortus* and *Br. melitensis* have been studied by a modified Thunberg technique in which methylene blue is used as indicator. As substrate a large variety of carbohydrates, alcohols and amino-acids were tested. The *abortus* strain was less active than the *melitensis* in enzyme production.—E. J. P.

Kraneveld, F. C. (1935). Anaërobe Infektionen bei den Haustieren in Niederländisch-Ostindien, besonders über eine spezifische Osteomyelitis beim Büffel. [**Anaerobic Infections in Domestic Animals in the Dutch East Indies, with Special Reference to a Specific Osteomyelitis in Buffaloes**].—*12th Int. vet. Congr. 1934.* **2.** 187-200. [English, French and Spanish summaries].

After a brief review of the anaerobic infections of domestic animals in the Dutch East Indies, the author describes in detail a disease of buffaloes named by him osteomyelitis bacillosa bubalorum [see also *V. B.* **4.** 216 and **5.** 120]. The

disease occurs in Sumatra, is usually sporadic and is characterized by lameness due to osteomyelitis of the femur or humerus, as a rule limited to the shaft and not attacking the epiphyses. The marrow abscess may burst through the shaft into the musculature. The causal organism has been placed in the Novy group of Miessner, Meyn and Schoop.—J. E.

Leslie, A. (1935). **Some Dietary and Other Factors Associated with the Epidemiology of Entero-Toxaemia (Pulpy Kidney) of Young Lambs.**—*Bull. Canterbury agric. Coll., N. Z.* pp. 24, 9 tables. [25 refs.]

The author attempts to prove that although *Clostridium ovitoxicum* is responsible for death of the lamb, the disease is primarily nutritional and faulty feeding of the dam is one factor of predisposition.

Many ewes in a flock were weighed regularly before, during and after gestation. Lambs were also weighed at birth and during growth. The author claims that his results show that in lambs the weight, age, sex and whether a twin or single, are facts not as important as is the antenatal nutrition of the lamb. Poor gestational feeding operates in lowering the birthweight of progeny and influencing the milk yield. Both interfere with the health and growth rate of the lamb. Lambs may die from enterotoxaemia that are small or moderately nourished, but all have some form of catarrh or inflammation of the alimentary tract.

Blood analysis of lambs at the enterotoxaemia period showed that they were in a state of metabolic imbalance.

Prevention, in the author's opinion, lay along the lines of vaccination of the ewe and/or of improved feeding of the ewe and lamb.—C. S. M. Hopkirk.

Breed, R. S., & Conn, H. J. (1936). **The Status of the Generic Term Bacterium Ehrenberg 1828.**—*J. Bact.* **31.** 517-518. [6 refs.]

The authors consider that the term *Bacterium* needs to be clarified by international action. They recommend that *Bacterium* be accepted as a temporary generic term, to include those species of non-spore-forming, rod-shaped, motile or non-motile bacteria whose relationships to other bacteria are not clear. When relationships to other similar species have been developed by investigation, then this generic term would be dropped. It would prevent the placing of a species in a definite genus and then having to withdraw it because its systematic position was not previously clear. Furthermore, authors feel free to define the genus themselves at the moment.—R. Lovell.

DISEASES CAUSED BY PROTOZOAN PARASITES.

Nomenclature of Piroplasms.

The names given below will generally be used in abstracts dealing with piroplasms. These names have been adopted merely for convenience of description.

Piroplasms of Cattle.

Babesia bigemina
B. argentina
B. berbera
B. bovis
B. major

Theileria parva
Th. dispar
Th. annulata
Th. mutans

Piroplasms of Equines.

Babesia caballi
B. equi (*Nuttallia equi*)

Piroplasms of Sheep and Goats.

Babesia ovis — *Theileria hirci*
B. motasi — *Th. ovis*

Piroplasms of Dogs.

Babesia canis
B. gibsoni

Henry, A. (1936). Les grosses rates en parasitologie vétérinaire. [**Enlarged Spleens in Veterinary Protozoology**].—*Rev. Path. comp.* **36.** 376-386.

The causes of enlarged spleens are discussed. The condition is difficult to diagnose in animals and is only recognized at autopsy. Symptoms of piroplasmosis, leishmaniasis and trypanosomiasis are given with special reference to the spleen, its functions, *ante-mortem* and *post-mortem* appearances. The spleen is the first line of defence in blood protozoan invasions and its enlargement generally precedes other lesions. It is an organ (unlike the liver) in which parasites are destroyed. Splenectomy usually causes a rapid increase of parasites in the blood with loss of immunity. Rupture of the organ is indicative of acute infections. In piroplasmosis and leishmaniasis, enlargement of the spleen is usually constant. In trypanosomiasis results are variable; the spleen does not swell as a direct specific response to blood invasion by trypanosomes, but it swells in response to their indirect action on the tissues, being actively concerned in purifying the blood. Splenomegaly is thus not seen in peracute attacks of trypanosomiasis. The trypanolytic powers of the spleen are probably low.—R. Fisher.

I. —. (1936). **Trypanosomiasis** [**Report of the Committee**].—*Quart. Bull. Hlth Org. L.o.N.* **5.** 168-169.

II. du Toit, P. J. (1936). **Trypanosomiasis of Domestic Animals.**—*Ibid.* 170-179. 3 tables.

III. Maclean. (1936). **Notes on Trypanosomiasis.**—*Ibid.* 179-181.

I. An account of the species of trypanosomes in domestic animals in Africa and the relative distribution of nagana and sleeping sickness. Recent advances in chemotherapy are discussed. The Harris trap is said to have reduced tsetse flies from 70 to 0·3 per trap *per diem* in the area in which observations were made.

II. *Tryp. congolense*, *Tryp. vivax* and *Tryp. brucei* are the trypanosomes that usually occur. The first is most important in cattle, sheep and pigs. *Tryp. vivax* is common in cattle, but rare in horses. *Tryp. brucei* occurs in horses and dogs. It also occurs in cattle but is of low virulence in this species. The symptoms of all three infections in animals are similar. The methods of diagnosis are discussed, the most important being animal inoculation and the complement-fixation test. In chemotherapy, " antimosan " and " styrylquinoline " No. 314 give the best results, especially the former in *Tryp. vivax* and *Tryp. congolense* infections. There is no drug-fastness. The Harris trap is described. It gives the best results in fly control and has enabled animals to live in areas where normally they could not exist.

III. A record of experiments with " Bayer 205 " and certain quinoline compounds; " styryl " 245 is the most effective for *Tryp. brucei* in mice but it must be used intravenously in small doses. *Tryp. rhodesiense* retains its infectivity for man after animal passage of 12 to 18 months.—R. Fisher.

Corson, J. F. (1936). **A Note on Hyrax and Dikdiks (Rhynchotragus) from Areas inhabited by Tsetse Flies.**—*J. trop. Med.* (*Hyg.*). **39.** 138. [Copied *verbatim* from *Trop. Dis. Bull.* **33.** 649-650. Signed W. Y.]

Hyrax and dikdiks obtained from tsetse-free districts are known to be very susceptible to infection with *T. rhodesiense*, yet they are plentiful in places where tsetse are fairly numerous and also in sleeping sickness areas. The question arises whether these animals have acquired some resistance to infection or whether their existence in fly country depends on less exposure to infection than there seems to be.

During August, 1934, 42 Hyrax were caught in an area where *G. swynnertoni* was plentiful and trypanosomiasis among stock was troublesome, but sleeping sickness unknown. They were taken to Tinde and thick blood films were made and a white rat inoculated from each. Then in most cases the Hyrax was inoculated with the blood of a rat infected with *T. rhodesiense*. None of the blood films showed trypanosomes and none of the inoculated rats became infected. All the 29 Hyrax which lived long enough became infected. The cerebrospinal fluid of some of them showed a large number of white cells, and trypanosomes were seen in two cases.

In March and April, 1936, 42 more Hyrax were caught in the vicinity of a sleeping sickness settlement at Uyogo in the Kahama district, where *G. morsitans* was plentiful. These animals were examined and treated in exactly the same way as the previous batch, and the results were exactly the same.

The experiments on the dikdiks were similar, but on a much smaller scale, only 6 animals being used. The general conclusion is that Hyrax are probably less exposed to the bites of tsetse than casual observations of their habits would suggest.

MIESSNER, J., & HANSEN, K. (1936). Trichomoniasis der Tauben. [**Trichomoniasis of Pigeons**].—*Dtsch. tierärztl. Wschr.* **44.** 323-330. 9 figs., 4 tables. [19 refs.]

This article records investigations into a disease of young pigeons known as " yellow head ". The birds are affected when between 14 days and four weeks old, are badly nourished and exhibit diarrhoea and a yellow discharge from the nasal openings. The upper throat regions exhibit thickened patches, which look yellow through the stretched skin. These thickenings develop in three or four days to the size of a hazel nut. In younger birds the disease takes a fatal course, but in older birds the thickening can be detached and squeezed out through the beak, recovery following. On *post-mortem* examination the structures appear as thickenings on the mucous membrane of the oesophagus and pharynx, and may occur at the angles of the beak and on the mouth papillae. They are yellowish-brown in colour with a crumbly, ridged surface. Sometimes necrotic lesions are encountered in the liver and other organs.

Trichomonads were readily demonstrated in the detritus, whilst microscopic examination, culture and subinoculation failed to reveal any other cause for the disease. The organism could be cultivated in a Locke's solution-horse-serum-egg medium, and growth occurred in spite of bacterial contamination.

It was also shown that apparently healthy adult birds harboured the parasite in the mouth and oesophagus, and that disease in young birds was associated with the infection of their parents. It was noticed that infection spread amongst the adult birds ; this was traced to a contamination of the drinking water, from which pathogenic trichomonads were isolated. The authors conclude that the organism is *Trich. columbae*.—U. F. RICHARDSON.

I. YAKIMOFF, W. L. (1936). Zur Frage der Nierenkokzidioze der Gänse in USSR. [**Renal Coccidiosis of Geese in the U.S.S.R.**]—*Tierarztl. Rdsch.* **42.** 227-228. 1 table.

II. Yakimoff, W. L., Baskakoff, W. P., Gousseff, W. F., Matschulsky, S. N., Mizkewitsch, W. J., Rastegaïeff, E. F., & Keschner. (1936). Zur Schweinekokzidiose in Russland (USSR.). [**Porcine Coccidiosis in U.S.S.R.**]—*Berl. tierärztl. Wschr.* **52.** 358-362. 11 tables. [Num. refs.]

III. Yakimoff, W. L., & Gousseff, W. F. (1936). Zur Frage der Kokzidien der Fuchse. [**Coccidiosis of Foxes**].—*Wien. tierärztl. Mschr.* **23.** 359-361. 1 fig., 1 table. [7 refs.]

IV. Honess, R. F. (1936). **Natural and Experimental Infections of Dogs with *Eimeria canis*.**—*J. Amer. vet. med. Ass.* **88.** 756-757. [3 refs.]

I. The author records investigations as to the prevalence of goose coccidiosis in Russia by the examination of goose faeces from farms.

On a farm in North Russia coccidial infection was found in 4·8 per cent. of young geese and 6·7 per cent. of adult geese. The infection was due to the kidney coccidium *Eimeria truncata*. A similar infection was detected in geese in Transcaucasia.

II. This article records investigations into the prevalence of swine coccidiosis in Russia. Three types of coccidia were encountered which appeared to correspond with the descriptions given of *E. debliecki*, *E. scabra* and *E. perminuta*. In the case of the last, it was found that the organism belonged to the family *Isospora* and not to the *Eimeria*. *E. scabra* was not found in Leningrad and may be confined to the southern areas. Infection occurred in piglets under one and a half months old, and appeared to be contracted from sucking teats contaminated with faeces, the infection rate in the piglets depending on the severity of the maternal infection. Infected piglets were weak and unthrifty, but did not display symptoms of severe disease. The infection rate increased with age, and in some farms rose to 85 per cent. in pigs over one year old.

III. This article describes two coccidial species isolated from foxes in Russia; one of these resembled *E. felina* in size, but was distinguished by the roundness of the oocyst and the absence of residual bodies. It is proposed to name this species *E. adleri*. The second species was very rare and sporulating forms could not be obtained. The oocyst was larger than that of any of the other species described from the cat, dog or fox.

IV. This article records observations on infection of dogs with *E. canis*. On the experimental feeding of sporulated oocysts to two dogs, oocysts appeared in the faeces after 8 and 17 days respectively, but the dogs did not develop symptoms of disease.—U. F. Richardson.

I. Kalmikov, E. S. (1936). Glavnejsie zadači borbi s piroplazmozami. [**Control of Piroplasmosis**].—*Sovyet. Vet.* No. 3. pp. 49-54. 1 table.

II. Nikolsky, S. N. (1936). Rezultati planovich meroprijatij po likvidacii piroplazmoza kr. rog. skota na sev. Kavkaze. [**The Results of Bovine Piroplasmosis Control in the Northern Caucasus**].—*Ibid.* pp. 66-70. 2 tables.

III. Koneva, Z. P. (1936). Opit massovoj profilaktiki piroplazmoza lošadej. [**The Mass Treatment of Equine Piroplasmosis**].—*Ibid.* No. 4. pp. 60-62. 2 tables. [French summary].

I. The author holds that the best method of piroplasmosis control is the cleansing of strictly-defined regions one after the other. He recommends the establishment of quarantine stations at all points through which cattle, etc. enter the given region, and the dipping of all tick-infested animals in sodium arsenite. He suggests research for a less expensive arsenic product for this purpose. In his opinion trypan blue is the best prophylactic against equine piroplasmosis.

II. This paper gives statistics on the reduction in mortality of cattle from piroplasmosis, which was brought under control between 1931 and 1934. The tick infestation was attacked by the use of arsenic dips. By 1934 the infection was nearly eradicated.

III. A description of mass treatment of over 1,000 horses for piroplasmosis with trypan blue.

I. Cuillé, J., & Chelle, P. L. (1936). L'anaplasmose du mouton en France. [**Anaplasmosis of Sheep in France**].—*Rev. gén. Méd. vét.* **45.** 129-140. [12 refs.]

II. Lestoquard, F., Donatien, A., & Salord, C. (1936). Effet de la splénectomie dans l'anaplasmose du mouton. [**Effect of Splenectomy in Anaplasmosis of Sheep**].—*Bull. Soc. Path. exot.* **29.** 264-266. [2 refs.]

I. The authors record observations on the occurrence in the blood of sheep of marginal coccus-like bodies strongly resembling anaplasms. The bodies were first observed in central France in 1932 in sheep at a veterinary hospital which were showing symptoms of jaundice and haemoglobinuria. The examination of similar cases in succeeding years showed that anaplasmosis was an intercurrent disease and that the presence of parasites in the blood was due to a breakdown in immunity brought about by the primary disease. An examination of the blood of sheep suffering from various diseases has yielded *Anaplasma ovis* and *Theileria recondita*. Splenectomy, when practised in these cases, caused a rapid increase of parasites in the peripheral blood. Further research has shown anaplasmosis to exist in the south and south-west of France. Symptoms, both *ante* and *post mortem*, are described.

II. Results of splenectomy vary considerably and three eventualities are possible. In the case of the Piroplasmidae, splenectomy only provokes the temporary suspension of immunity and resistance. With the Anaplasmidae, there is a permanent suspension of immunity. Finally, with *Th. parva* and *Th. dispar*, splenectomy does not seem to have any action.—R. Fisher.

I. Boynton, W. H., Herms, W. B., Howell, D. E., & Woods, Gladys M. (1936). **Anaplasmosis Transmission by Three Species of Ticks in California.**—*J. Amer. vet. med. Ass.* **88.** 500-502. [3 refs.]

II. Stiles, G. W., Jr. (1936). **Mechanical Transmission of Anaplasmosis by Unclean Instruments.**—*N. Amer. Vet.* **17.** No. 6. 39-41. [1 ref.]

I. Four cases of experimental transmission of anaplasmosis by ticks are reported. In the first case, *Dermacentor andersoni* was the vector, thus confirming previous reports. In the second and third cases, *D. occidentalis* was used, demonstrating for the first time, it is believed, in the U.S.A., a cyclical transmission of the disease. The fourth case involves another species, *D. albipictus*, hitherto unproved as an agent of mechanical transmission of anaplasmosis.

II. Numerous cases in cattle are cited following dehorning, vaccinations and injections (intrav.) where aseptic precautions were not observed. Experimentally, anaplasmosis has been transmitted by the intradermic injection of 0·025 c.c. of virulent blood.—R. Fisher.

DISEASES CAUSED BY VIRUSES.

I. Schmidt, S., & Hansen, A. (1936). L'importance de la constitution du complexe virus aphteux-hydroxyde d'aluminium. Relation entre la constitution du complexe virus aphteux-hydroxyde d'aluminium et ses propriétés

pathogènes et immunisantes. [**Properties and Significance of Foot and Mouth Disease Virus Adsorbed on Aluminium Hydroxide**].—*C. R. Soc. Biol. Paris.* **121.** 1236-1239. [2 refs.]

II. Hansen, A., & Schmidt, S. (1936). Adsorption du virus aphteux au moyen de l'hydroxyde d'aluminium. [**Adsorption of the Virus of Foot and Mouth Disease with Aluminium Hydroxide**].—*Ibid.* 1239-1242. [1 ref.]

III. Schmidt, S., & Hansen, A. (1936). Immunisation contre la fièvre aphteuse au moyen de virus formolé, additionné d'hydroxyde d'aluminium. [**Immunization against Foot and Mouth Disease by Means of a Formolized Virus in Aluminium Hydroxide**].—*Ibid.* 1242-1244. [3 refs.]

IV. Schmidt, S. (1936). Immunisation contre la fièvre aphteuse au moyen des vaccins renferment trois types différentes de virus aphteux. [**Immunization against Foot and Mouth Disease by Means of a Vaccine Embodying Three Different Types of Virus**].—*Ibid.* 1244-1247.

I. The authors tested the immunizing properties of foot and mouth disease virus adsorbed with various proportions of $Al_2(OH)_6$ and inoculated subcutaneously into guinea pigs. They found that the larger proportions of $Al_2(OH)_6$ gave the best results and that there was some risk of setting up F. & M. when given by intradermal inoculation. Tests of immunity were made intradermally into the plantar pads seven days later, using 10,000 M.L.D. No loss of weight and no generalization followed and local reaction varied from nil to the development of a typical primary vesicle.

II. When present in moderate amount the virus of F. and M. is rapidly and completely adsorbed by $Al_2(OH)_6$, provided the diluent is either distilled water or physiological saline solution. An elution of the complex thus formed remains inactive when treated *in vitro* by a solution of disodium phosphate (pH 9·1), Martin's broth or fresh guinea pig serum. When an M/50 disodium phosphate solution (pH 7·6) is used a small amount of the virus is liberated from the complex and the remaining adsorbed virus has marked immunizing properties.

III. The authors compared the immunizing properties of 0·1 per cent. formolized F. and M. virus, diluted 1 : 50 and kept at 0°C. for eight days, with the same mixture diluted 1 : 3 of normal saline plus one part of $Al_2(OH_6)$ hydroxide. They found that the latter vaccine gave stronger and more lasting immunity. When formolized vaccine was followed in five days by the latter vaccine, total immunity was set up in five out of six guinea pigs within 12 days against 100 intradermal M.L.D. Only transient local reaction occurred in the sixth guinea pig.

IV. Guinea pigs were successfully vaccinated against the three types of F. and M. disease virus "A", "O" and "C" by a trivalent vaccine prepared either by adsorption with $Al_2(OH)_6$ or by mixing formolized viruses, the latter being followed by the former [as in III].

In all the methods used the immunizing response was greater for types "A" and "C" than for type "O".—C. V. Watkins.

Pokorny, V. (1935). Dosavadní postup tlumení moru vepřů a jeho výsledky. [**Progress in the Control of Swine Fever and its Results in Czechoslovakia**]. —*Zverolék. Obz.* **28.** 465-469. [3 refs.]

In seriously infected districts simultaneous inoculation using massive doses of serum gave very good results. By means of systematic inoculation, outbreaks of swine fever could be prevented and the annual losses reduced to a minimum.

In areas usually free from swine fever, simultaneous inoculation should be practised only in herds in which the infection is present.—E. Přibyl (Brno).

Macek, K. (1936). Chřipka vepřů. [**Swine Influenza**].—*Zverolék. Obz.* **29.** 26-31.

The primary cause of swine influenza is infection with a filtrable virus, but this is complicated by bacterial infection. Predisposing causes are poor hygienic conditions and poor nutrition.

The clinical picture comprises various symptoms of bronchitis, bronchopneumonia, gastro-enteritis and encephalomyelitis. The lesions at *post-mortem* examination are characteristic. There are pathological changes in the lungs, stomach and intestinal tract. The spleen and lymph glands are enlarged.

The best method for the infection of laboratory animals (rabbits, white rats and dogs) is subdural inoculation.

The author draws attention to the fact that this disease is sometimes wrongly diagnosed as swine fever, swine plague, Teschen disease or Aujeszky's disease, which makes the control of swine diseases in general difficult.—E. Přibyl (Brno).

I. Vogt, V. (1936). Experimenteller Beitrag zur Kontaktübertragung der Ferkelgrippe und ihrer Bekämpfung mit hygienischen Massnahmen. [**Contact Transmission of Piglet Influenza and its Prevention**].—*Dtsch. tierärztl. Wschr.* **44.** 355-358. 1 fig. [12 refs.]

II. Köbe, K. (1936). Immunität und Immunisierung gegen Ferkelgrippe. [**Immunity and Immunization against Piglet Influenza**].—*Tierärztl. Rdsch.* **42.** 359-362. 1 table. [12 refs.]

III. Fertig, H. (1935). Die Empfänglichkeit der weissen Maus für das Virus der Ferkelgrippe. [**Susceptibility of White Mice to Piglet Influenza Virus**]. —*Inaug. Diss., Hanover.* pp. 23. 2 figs., 1 table. [10 refs.]

I. Further studies of the epidemiology of piglet influenza. The fact is again emphasized that this is essentially a disease associated with bad hygienic conditions, and that control may be effected by improvement of the conditions, and the application of simple quarantine regulations. By keeping all healthy stock away from direct contact with infected or carrier animals, in clean styes, an epidemic may be stopped.

II. An investigation of the immunization of young pigs against piglet influenza revealed the difficulty of distinguishing between artificially acquired immunity and naturally acquired resistance, which appears as pigs grow up. Antisera have little protective value : dead virus does not immunize. There only remains living virus, and it is very doubtful if the dangers accompanying the administration of active infection to two-week-old pigs justify the results produced. In experiments it is difficult to tell whether any resulting resistance is due to the vaccine or the age reached by the animal. In any case, if the young pigs can be kept away from infection for a few weeks, they cease to be susceptible.

III. White mice were susceptible to the virus of swine influenza, but symptoms of infection were not characteristic. In 62 per cent. of cases the lungs at *post-mortem* examination revealed a characteristic peribronchial cellular infiltration. This lesion appears in too small a percentage of cases for mice to be of any value for diagnostic purposes.—E. J. Pullinger.

I. Noskov, A. I. (1935). Opiti vakcinacii protiv encefalomielita lošadej. [**Vaccination against Equine Encephalomyelitis**].—*Sovyet. Vet.* No. 7. pp. 28-34. [French summary].

II. Gurvič, B. M., Dudarenka, G. V., Lašina, O. M., & Majboreda, A. A. (1936). Dalnejšie issledovanija po vakcinacii protiv encefalomielita lošadej.

[**Further Research on Vaccination against Equine Encephalomyelitis**]. — *Ibid.* No. 7. pp. 12-18. 3 tables. [French summary].

I. The author tested a number of preventive vaccines during the early months of 1934. In the autumn he tested them on horses in danger of infection in natural outbreaks. He gives full details of the preparation of eight vaccines (formol-vaccine, phenol-vaccine, phenol-glycerin-vaccine, a formol-vaccine received from GILTNER and SHAHAN (U.S.A.), a virulent brain emulsion – live virus, sensitized virus, combined injections, anti-rabic emulsion), with an estimate of the value of each – from controlled experiments.

A single dose of the formol vaccine (virulent rabbit brain with 0·2 per cent. formalin added) did not protect rabbits against artificial infection after one dose, but three doses did appear to be of distinct immunizing value. The phenol vaccine (virulent rabbit brain with 1 per cent. of carbolic acid added), did not give encouraging results in rabbits.

The phenol-glycerin vaccine (prepared similarly to the rabies vaccine of UMINO and DOI) protected half the test rabbits against infection. The formol vaccine supplied by GILTNER and SHAHAN (virulent brain with 0·4 % formalin added) was given to 23 rabbits (2 doses with an interval of 2 weeks), but 8 died following these injections. 11 out of the 15 survivors resisted inoculation with virus. The virulent brain vaccine consisted of 1 : 5 or 1 : 10 brain suspension in normal saline, and was given to series of rabbits in single to quintuple doses and artificial infection was carried out at various intervals later. The results were similar to those obtained by the use of GILTNER and SHAHAN'S formol vaccine, and it was concluded that a double vaccination offered great hope of being of practical value.

A sensitized vaccine was made by treating the sediment from a saline suspension of virulent brain with hyperimmune serum for 48 hours at room temperature. The centrifuge sediment of this mixture, resuspended in saline, proved to be useless when tested on 6 rabbits.

Of 8 rabbits inoculated simultaneously with virulent brain and hyperimmune serum on opposite sides of the body, 6 resisted infection 23 days later. Various experiments with antirabic vaccine tended to show that it had some protective value, after repeated injections, against the virus of encephalomyelitis.

II. In a continuation of the above work the authors replaced rabbits by white mice, because the latter could be infected by intramuscular inoculation, whilst the rabbits could not.

In addition to the vaccines described in the first experiment, various dried vaccines were tested : they did not give very useful results on mice or on horses. Live virus passaged through rabbits did not cause any illness in horses. Large numbers of horses were inoculated with an ether-phenol vaccine, a dead phenol-glycerin vaccine, and a live phenol-glycerin vaccine, but as the mortality in the controls was very low, no evidence of the value of the vaccines was obtainable.

GURVIČ, B. M., BRIN, Z. M., DUDARENKA, G. V., & LAŠINA, D. M. (1935). Tenacitetnie svoistva virusa encefalomielita lošadej. [**The Viability of the Virus of Equine Encephalomyelitis**].—*Sovyet. Vet.* No. 5. pp. 20-24. 2 tables. [French summary].

The authors give in detail the results obtained by exposing a virulent brain emulsion (from a rabbit) of the virus to (1) heat ; (2) desiccation ; (3) sunlight ; (4) diffused light ; (5) low temperatures (0° to +2°C.) ; (6) water at various temperatures, and (7) chemical action.

There are two tables giving in detail the results of experiments with various chemicals. Sulphuric and hydrochloric acids, caustic soda, formalin and bleaching powder were found to be the most effective for killing the virus.

Viability Data.

Physical Agents.

(1) Heat.—The virus was killed in two hours at 45°C., in one hour at 55°C., in 30 minutes at 60°C., in 20 minutes at 70°C., and in 10 minutes at 80°C.

(2) Desiccation.—Results varied. Desiccation at 37° to 40°C. in some cases killed the virus in from four to eight hours.

(3) Sunlight.—Exposure (temperature 35° to 40°C.) in a thin layer of brain substance for eight hours killed the virus: four hours' exposure did not kill it.

(4) Diffused Light.—A thin layer of brain substance at laboratory temperature in summer (20° to 25°C.) lost its virulence in three days.

(5) Low Temperature.—A thin layer of virulent brain in a refrigerator at 0° to +2°C. was virulent at three and ten days but not after 21 days.

(6) Water at Various Temperatures (virulent brain substance in distilled water).—The virus was dead after 15 days at 15° to 20°C. and after 21 days at 0° to +2°C. It was alive after three and a half months in a refrigerator at −10°C.

Chemical Agents.

Name of Chemical.	Concentration per cent.	Virus. Dead after – hours.	Virus. Alive after – hours.	Name of Chemical.	Concentration per cent.	Virus. Dead after – hours.	Virus. Alive after – hours.
1. Bleaching powder (not less than 30% Cl.)	5	20, 10, 5	2	8. Formalin	0·4	24, 20	12, 6
				„	1	12, 6, 3	—
2. Creolin	2	—	2				
„	3	20, 10	5				
„	5	20, 10	2, 6	9. $Ca(OH)_2$.	10	22, 10, 6	—
„	10	20, 10, 5, 3	2				
3. KOH.	0·5	2	½, 1	10. Na_2CO_3.	1	—	6
„	1	2, 1	½				
4. NaOH.	0·5	1	½	11. NH_4OH.	½	—	24
„	1	1	—	„	1	—	24
5. HCl.	½	20, 6, 3, 2	½, 1				
				12. Urotropine.	½	—	24
„	1	6, 3, 2, 1	—	„	1	—	24
„	3	2	—				
6. H_2SO_4.	½	3, 1, ½	—	13. $KMnO_4$.	1	—	6
				„	1	—	3
7. Phenol	1	20	12				
„	2	20, 12	6	14. Potas. alum.	½	—	6
„	3	12, 6	3	„ „	1	—	3

Chluscov, K. A., *et al.* (1935). Subarachnoidalnii sposob zaraženija kak metod vosproizvedenija eksperimentalnogo epizootičeskogo encefalomielita. [**Equine Encephalomyelitis Produced Experimentally by Subarachnoidal Infection**].—*Sovyet. Vet.* No. 5. pp. 24-28. [French summary].

For the artificial infection of horses and other animals, the subarachnoidal mode of injection, after the removal of some cerebrospinal fluid, was found to give uniformly good results.

Kudriavtsev, A. A. (1934). Kartina krovi i moči pri eksperimentalnom MPZ lošadej. [**Blood Picture and Urine Analysis in Equine Encephalomyelitis**]. —*Sovyet. Vet.* No. 12. pp. 30-34. [French summary].

The authors, who examined the blood, urine and cerebrospinal fluid of infected horses, concentrated more particularly upon the erythrocytes, haemoglobin, bilirubin, the resistance of the erythrocytes, their sedimentation-rate, the pulse, leucocytes, blood-formula (Schilling and Nikolaev's method), and qualitative analysis of the urine.

Their conclusions were as follows :–

The number of erythrocytes and the haemoglobin content of the blood of infected horses tends to increase in this disease. The hyperleucocytosis, which is observed at the beginning of the disease, begins to decrease after the crisis. A lowered resistance of the erythrocytes is indicated by the presence of young erythrocyte forms in the blood. The R.B.C. sedimentation rate is slowed. Generally speaking, in infected horses hyperbilirubinaemia is observed. The author considers that this is connected with the destruction of the excretory cells of the liver and the disintegration of the erythrocytes. The delayed sedimentation rate of the erythrocytes and the appearance of bilirubin in the blood serum of horses affected with encephalomyelitis are specific for the disease and might serve as a means of diagnosis if further studied.

Sobra, K. (1935). Hodnoceni krevnich změn při infekčni anemii koni. [**Changes in the Blood Picture in Equine Infectious Anaemia**].—*Voj. zdravotn. Listy.* **11.** 32-39. [English and French summaries].

Haematological examination of anaemic horses shows a close connexion between the changes in the blood picture and those in the internal organs which occur as a direct effect of the virus. The examination of the blood is very important in the latent form of equine infectious anaemia, when the clinical symptoms are not present. It is necessary to adopt a uniform technique in examining the blood and testing the changes, and the procedure for the technique and tests is set out. The blood findings in infectious anaemia are fundamentally different from those in anaemias of other origin, and these are enumerated in tables.

—E. Přibyl (Brno).

Daubney, R., & Hudson, J. R. (1936). **Transmission Experiments with Bovine Malignant Catarrh.**—*J. comp. Path.* **49.** 63-89. 5 figs., 1 plate, 2 graphs. [Numerous refs.]

The authors carried out transmission experiments with a number of strains of " virus " from cases of malignant catarrh obtained in Kenya. Five mild strains were investigated, but it was not possible to passage the disease with regularity in susceptible cattle. The form of disease encountered in these cases corresponded with Goetze's mild syndrome [*V. B.* **1.** 90].

Another strain was obtained from a calf infected with the more severe " head and eye " syndrome and was passaged through a total of 33 cattle causing death

in every case after an incubation period of from four to 25 days. The infective agent was conveyed by defibrinated blood, when inoculated subcutaneously, and by brain and lymph node tissue when inoculated into a prescapular lymph node. The " head and eye " type of malignant catarrh is characterized by a muco-purulent discharge from the eyes, nostrils and mouth, and the head becomes swollen. Death occurs on the tenth day of illness or earlier. The most constant lesions include sub-serous haemorrhage of the gastric omentum, petechiae of the abomasal mucosa and swelling and mottling of the liver and kidneys, the latter sometimes also showing infarcts. The nasal cavities and turbinate bones show conditions ranging from congestion to extensive ulceration with diphtheritic deposits, and the anterior lobes of the lungs are oedematous and may show atelectasis or hepatization. The lymph nodes throughout the body are nearly always enlarged, whilst the brain may show anaemia or congestion and the carcass is emaciated. The histopathology of the disease is described.

Irregular symptoms include stomatitis and pharyngitis of various degrees. petechiae of the intestinal tract, congestion of the larynx and petechiae of the epicardium.

The disease was transmitted from cattle to rabbits in seven out of ten attempts and back again to cattle in two out of four attempts.

The authors consider that " snotziekte " is identical with bovine malignant catarrh.—J. E.

I. Beach, J. R., & Schalm, O. W. (1936). **A Filterable Virus, Distinct from that of Laryngotracheitis, the Cause of a Respiratory Disease of Chicks.**—*Poult. Sci.* **15.** 199-206. 5 tables. [5 refs.]

II. Gibbs, C. S. (1936). **Laryngotracheitis.**—*J. Amer. vet. med. Ass.* **88.** 413-421. 1 table. [Numerous refs.]

III. Brandly, C. A. (1936). **Studies on the Egg-Propagated Viruses of Infectious Laryngotracheitis and Fowl-Pox.**—*Ibid.* 587-599. 4 tables. [16 refs.]

IV. Burnet, F. M. (1936). **Immunological Studies with the Virus of Infectious Laryngotracheitis of Fowls using the Developing Egg Technique.**—*J. exp. Med.* **63.** 685-702. 1 fig. on 1 plate, 6 tables. [12 refs.]

I. This article records the occurrence of a respiratory disease of chickens clinically resembling infectious laryngotracheitis and caused by a filtrable virus which passes through all grades of Berkefeld filters. Chickens that were resistant to infection with this virus were shown to be susceptible to coryza caused by *Haemophilus gallinarum*, indicating that the respiratory disease studied is not related to infectious coryza.

Cross-immunity tests carried out with this virus and the virus of infectious laryngotracheitis demonstrated that the two viruses are distinct from one another.

The virus, when dried and stored in a refrigerator in sealed tubes, remained alive for 180 days and in 50 per cent. glycerin, for 80 days.

II. The author gives a comprehensive summary of our present knowledge of infectious laryngotracheitis under the headings of aetiology, method of transmission, eradication and control, and vaccination.

It is stressed that vaccination should only be carried out in regions where the disease has existed for a long time and where practically all flocks are affected. Vaccination must be in the hands of experienced and responsible persons.

III. The two methods here described of propagating the viruses of infectious laryngotracheitis and fowl pox by the inoculation of the chorio-allantoic membrane of the developing egg have advantages over certain others, in that the technique is simple and rapid, and bacterial contamination during inoculation and incubation was less than 5 per cent.

One strain of infectious laryngotracheitis was passaged through 35 series of developing hens' eggs and did not show any apparent modification in its virulence. Fowl pox virus was passaged through eight series of hens' eggs without any significant alteration in its virulence for chickens or eggs. From the standpoint of percentage of " takes " and the degree of immunity conferred, the egg-propagated viruses of infectious laryngotracheitis and fowl pox would appear to be as satisfactory for protective vaccination as the respective viruses obtained from affected tissues of chickens.

IV. Using the technique of chorio-allantoic membrane inoculation, studies were made of strains of the virus of infectious laryngotracheitis of Australian origin. The inoculation of suitably diluted suspensions of virus gives rise to isolated foci or pocks of characteristic macroscopic form and histological structure. The number of these foci (pock count) may be used as a measure of the amount of virus present. Two distinct types of focus are produced by laryngotracheitis strains, one being characteristic of epizootic strains from New South Wales and America, and the other of a Victorian strain of very low virulence for fowls. No qualitative antigenic difference can be detected amongst these strains, but the epizootic strains are more readily neutralized by immune serum than the enzootic Victorian strain.

Experiments on the inactivation of the virus by immune serum show that (1) the process of inactivation requires time for its completion *in vitro* ; (2) the proportionate reduction in titre produced by a given concentration of antiserum is independent of the initial virus concentration ; (3) reactivation by dilution is readily demonstrable ; (4) virus in the presence of small concentrations of immune serum producing only a slight inactivating effect is rendered incapable of passing through a gradocol membrane normally permeable to it, and (5) the foci produced from partially neutralized virus suspensions are smaller than normal. These findings bring the neutralization of laryngotracheitis virus by immune serum into line with the phage-antiphage reaction as described by Andrews and Elford [*V. B.* **3.** 503].—R. F. Gordon.

I. Cole, A. F. (1936). **Rat-Bite Fever from a Kitten.**—*Brit. med. J.* March 28th. 638-639.

II. Laverick, J. (1936). **Rat-Bite Fever from a Cat.**—*Ibid.* 639-640.

I. While playing with a kitten a human subject was bitten and scratched. The paper deals with the condition as it occurs in human beings and gives the methods adopted to establish a positive diagnosis. During an attack of the fever the right supratrochlear gland was removed and one-third of it was ground up and inoculated into a guinea pig. Thirty-one days after inoculation the guinea pig became dull and acute conjunctivitis was present. Blood films contained a minute spirillum which was subsequently identified as *Spirillum minus.*

II. This paper deals with the condition as it occurs in human beings. No mention is made of any endeavour to demonstrate the spirillum.—G. D. Munro.

PARASITOLOGY (ARTHROPODS IN RELATION TO DISEASE).

Knowlton, G. F. (1935). **Simuliids annoy Livestock.**—*J. econ. Ent.* **28.** 1073.

The author records the occurrence of enormous numbers of simuliids, which attacked horses and, to a small extent, cows in parts of Southern Idaho during August, 1934. Specimens were identified as *Simulium vivitatum* Malloch,

S. vittatum and *S. venator*. The flies settled on the soft skin region of the body, particularly on the head, and caused a raw and roughened condition of the skin. —J. E.

PARASITOLOGY (DISEASES CAUSED BY HELMINTH PARASITES).

Amundsen, H., & Økland, F. (1936). Dødelig enteritis hos duer, forårsaket av ikten Echinoparyphium paraulum (Dietz). [**Fatal Enteritis in Pigeons caused by** *E. paraulum* **(Dietz)**].—*Norsk VetTidsskr.* **48.** 25-27. [5 refs.] [German summary].

An outbreak of a fatal disease on a carrier-pigeon farm came to the authors' notice in the autumn of 1935; 21 birds had succumbed during the month of May. Three pigeons were examined *post mortem* and a haemorrhagic enteritis, set up by the trematode, *E. paraulum*, was found to be the cause of death. This is the first report of the occurrence of this parasite in Norway.—G. N. (Oslo).

van den Berghe, L. (1936). Sur le polymorphisme des oeufs de *Schistosoma haematobium* et la présence d'oeufs du type bovin dans les infections de l'homme au Katanga (Congo Belge). [**Polymorphism of the Eggs of** *S. haematobium* **and Eggs of the Bovine Type in Man in the Belgian Congo**]. —*Bull. Soc. Path. exot.* **29.** 41-46. 2 figs. [5 refs.]

The author re-examines the arguments ranging round the specific determination of *S. matthei* and what is known of the variability of the eggs of *S. haematobium*. He examined a large number of the eggs of *S. haematobium* in cases of human infection in the Belgian Congo and observed a considerable degree of variation which led him to the conclusion that the supposed human infection with *S. matthei* of bovine or ovine origin described by Blackie [(1932). A Helminthological Survey of Southern Rhodesia.—*Mem. Lond. School Trop. Med. & Hyg.*] was really an infection of *S. haematobium* only.—E. L. Taylor.

Lukasiak, J. (1935). *Eucoleus aerophilus* (Creplin 1839) i *Crenosoma vulpis* (Dujardin 1845), nicienie narzodów oddechowych, psa i lisa. [*E. aerophilus* **and** *C. vulpis* **from the Respiratory Tract of Dogs and Foxes**].—*Wiad. weteryn.* **14.** 533-540. 4 figs., 4 tables. [Num. refs.] [French summary].

At *post-mortem* examination *E. aerophilus* was found embedded in the mucous membrane of the nasal cavity of one out of 121 dogs, while the parasite was isolated from the lungs and trachea of four out of nine foxes. The eggs of *E. aerophilus* are deposited by the female in the respiratory tract of the host, and they pass out of the body with nasal discharge, or, when swallowed, with the excreta. *C. vulpis* was found in one of nine foxes examined. The parasites were present in the lungs, trachea and nasal cavity. The eggs pass to the respiratory organs of the host, and thence to the exterior of the body.—K. Szczudłowski (Lwów).

Westerheim, O. (1936). Lungeormsykdom på geit i Indre Ryfylke. [**Lungworms in Goats in Ryfylke, Norway**].—*Norsk VetTidsskr.* **48.** 201-216. 1 fig.

This article is a survey of the occurrence and importance of lungworm infestation in goats in the district of Ryfylke. The author gives statistics based on observations made under general farm conditions, and describes some practical experiments.

In this particular part of the country, in which the climate is mild and humid,

the disease occurs frequently. Almost every old animal slaughtered harbours the parasites or shows injuries caused by them. In an experiment kids which were kept indoors all the time with their heavily infected dams were not infected.

In the acute outbreaks of the disease, which are of only infrequent occurrence, rather paradoxically, only a few of the flock become suddenly attacked, but many of the affected animals die.

For the treatment of chronic cases, the author recommends inhalation therapy with coal-tar derivatives mixed with turpentine, carried out on the whole flock four times during the winter season at two-monthly intervals.—G. N. (Oslo).

IMMUNITY.

I. de Lavergne, U., & Kissel, P. (1936). Cholestérol et immunité. [**Cholesterol and Immunity**].—*Rev. Immunol.* **2.** 165-189. [Numerous refs.]

II. Tzanck, A., & André, R. (1936). L'immunité. Le mot – le fait – l'idée. [**Immunity (Review)**].—*Ibid.* 273-287. [7 refs.]

III. Petterson, A. (1936). Les bactériolysines β et l'immunité contre les microbes influencés par elles. [β **Bacteriolysins and Immunity to the Bacteria Influenced by them**].—*Ibid.* 288-302. [1 ref.]

I. The literature bearing on the part played by cholesterol in immunity is surveyed. The authors conclude that there is no proof that it is an important factor in the body defences.

II. The authors discuss on broad biological lines the term immunity, the facts it covers and the different theories these have evoked.

III. An outline of the evidence pointing to the presence of bacteriolysins in serum, leucocytes and red blood corpuscles.

The properties of these bacteriolysins are discussed, also their differentiation from complement, and the part they play in immunity against bacteria sensitive to them.—A. Robertson.

I. Götze, R., & Müller, J. (1936). Zur Methodik und Technik der Tuberkulinisierung beim Rinde. [**Tuberculin Tests for Cattle**].—*Berl. tierärztl. Wschr.* **52.** 151-155. 9 figs. [3 refs.]

II. von Vásárhelyi, J. (1935). Ueber Tierexperimente mit dem Tuberkulose-Schutzmittel "AO". [**Experiments with "AO" Tuberculin**].—*Z. Tuberk.* **74.** 40-44. 2 figs., 1 table. [Numerous refs.]

III. Selter, H., & Weiland, P. (1935). Der Einfluss einer Tuberkulin-Desensibilisierung auf die Tuberkuloseimmunität. [**The Influence of Tuberculin Desensitization upon Immunity to Tuberculosis**].—*Ibid.* 161-169. 6 tables. [3 refs.]

IV. Carswell, R. (1936). **Value of the Negative Subcutaneous Tuberculin Test.**—*Brit. med. J.* May 16th. 990-992. [16 refs.]

I. The technique of tuberculin testing is explained in detail, and interesting apparatus is described. For obtaining the temperature in the subcutaneous test, a thermometer is described which is unbreakable and can be attached inside the rectum to the mucosal lining by means of a barb. The contrivance is left in position and the maximum temperature is registered by a metal indicator. Calipers for measuring the skin fold have a revolver grip and are regulated by a finder passed through the trigger guard. The compression of the skin is regulated by a spring. The extension of the jaws is recorded on the main caliper arm and on a dial having a geared pointer, the former giving gross measurements and the latter showing them to within 0·1 mm. [see also *V. B.* **3.** 508 and **4.** 681].

II. A report of experiments to test the value of " AO " tuberculosis vaccine. When inoculated into guinea pigs this vaccine produced no general reaction and only a mild local reaction at the site of inoculation. It did not engender a state of allergy, nor did it immunize guinea pigs against subsequent infections with virulent tubercle bacilli. It consists of a suspension of tubercle bacilli which have been grown on a special saponin-containing medium. Growth on this medium causes temporary loss of " acid-fastness ". The suspension is carbolized and stored in a refrigerator for from one to one and a half years before use.

III. The desensitization of tuberculin-sensitive (*i.e.* tuberculous) guinea pigs had no influence upon the resistance of such animals to the infection. In a group of tuberculous animals the infection developed as rapidly in those which were untreated as in those which were rendered insensitive to tuberculin by suitably spaced injections. This fact is advanced as evidence that allergy is no index to immunity and that the two conditions of allergy and immunity are independent of one another.

IV. A critical review of articles on tuberculin testing with special reference to the reliance to be placed upon negative reactions. On the veterinary side the author refers almost exclusively to the subcutaneous test and his views in consequence are of restricted interest. Evidence is offered by LINDBORG [(1933). *Hygiea, Stockh.* **95.** 887 and 925.] indicating that negative reactions in human beings should only be accepted with great reserve.

[This evidence is open to the criticism that insufficient effort has been made to confirm, by biological and microscopic examination, the presence or absence of tubercle bacilli].—E. J. PULLINGER.

ELZÉN, S. (1936). Om hjälpmedel vid den intrakutana tuberkulinundersökningen. [**Aids for the Intradermal Tuberculin Test**].—*Svensk VetTidskr.* **41.** 147-152.

To facilitate intradermal tuberculin testing in large herds, the author recommends that the operator should have an electric light to hang on his coat, use a clipper that cuts the hair very close, and a special syringe which he describes. —H. BERTHELSEN (STOCKHOLM).

DAMON, S. R., & HAJNA, A. A. (1935). **On the Iso-Electric Zones of** *Eberthella typhosa* **and** *Brucella abortus* **Agglutinins.**—*Amer. J. Hyg.* **22.** 392-397. 1 fig., 2 tables. [10 refs.]

The work of OTTENBERG and STENBUCK in determining the isoelectric zone of typhoid agglutinating antibody has been confirmed by these workers, who also place the turning point of typhoid agglutinin between pH 4·35 and 4·6. They have found the isoelectric zone of *Br. abortus* agglutinin to be between pH 5·57 and 5·65, with a turning point of pH 5·6.

The apparatus and technique are fully described.—A. W. TAYLOR.

DE BOISSEZON, P. (1936). Etat réactionnel du poumon au cours de diverses immunisations pratiquées par voie sous-cutanée. [**Reaction of the Lungs in Subcutaneous Immunization**].—*Ann. Inst. Pasteur.* **56.** 597-607. 2 figs. [Numerous refs.]

This is a study of the histological changes found in lung tissue following the subcutaneous injection of various antigenic substances. The author points out that the modifications brought about in spleen and liver tissue, through the inoculation of erythrocytes in the production of haemolytic serum, have already been studied and reported. He now records his own observations on similar lines in

regard to lung tissue. Rabbits were the experimental animals and sheep erythrocytes, normal horse serum, antitetanic serum, tetanus anatoxin and peptone the various substances used as inoculum. The local reaction in the lung tissue and the focal changes at the site of the injections are described. He concludes that lung tissue, as well as spleen and liver, plays an important part in the determination of immunity.—C. DAVENPORT.

I. WEINBERG, M., & GUILLAUMIE, M. (1935). Nouvelles recherches sur la production de sérums spécifiques par des injections d'antigène englobé dans la lanoline. Sérums anti-*Bacillus L.D.*, anti-*Bacillus paludis*, anti-*Bacillus D.* [**The Production of Specific Antisera to Anaerobes by Injections of Antigen in a Lanolin Base**].—*C. R. Soc. Biol. Paris.* **120.** 936-938. [1 ref.]

II. WEINBERG, M., & GUILLAUMIE, M. (1936). Les microbes du groupe *perfringens*-Holosérum anti-*perfringens*. [**A " Holoserum " against the *welchii* Group**].—*Ibid.* **121.** 1275-1278.

III. BENGTSON, Ida A. (1936). **The Official United States and International Unit for Standardizing Gas Gangrene Antitoxin** (*oedematiens*).—*Publ. Hlth Rep., Wash.* **51.** 266-275. 10 tables. [1 ref.]

I. Good antitoxic and antibacterial sera can be rapidly produced in horses by the injection of *Clostridium welchii* antigens in a lanolin base. The antigens used were either mixtures of dried toxin and living organisms, or dried and liquid toxins of Types B, C and D.

Gelatin and agar were also tried in the place of lanolin. In the case of *Cl. septique* the sera so made were not as good as those obtained with lanolin as a base, but in the case of *Cl. paludis* the results compared very favourably.

II. The author states his evidence for concluding that the group contains two types – (1) *Cl. welchii* Wilsdon, Type A, and (2) two ovine types, one of which consists of two varieties of the same organism, namely, the lamb dysentery bacillus (Wilsdon, Type B) and *Cl. paludis* (Wilsdon Type C); and the other a single species, *Cl. welchii* (Wilsdon, Type D) which is identical with *Cl. ovitoxicum*.

As each anaerobic species produces a toxin consisting of several fractions which may vary in quantity and activity even in members of the same species, it follows that antisera prepared against one member of a species may be ineffective in the treatment of disease set up by another organism of the same species. To remedy this the author suggests a " polyvalent " serum for the one organism and suggests the term " holoserum " for it. This should be prepared by injecting a horse with mixture of the following toxins :– *Cl. welchii* Types A and B ; A and C ; B and D, and finally A, B, and D.

III. The Permanent Commission on Biological Standardization have adopted as the international unit of gas gangrene antitoxin (*oedematiens*) the specific antitoxic activity contained in 0·2681 mg. of the dried serum preparation of the Statens Seruminstitut of Denmark. This decision was made after laboratories in various countries had reported favourably upon the antigens and the serum. This report details the tests performed by the United States Public Health Service.
—GWILYM O. DAVIES.

DISEASES, GENERAL.

OPPERMANN, T. (1936). Praktische Winke für die Diagnose und Bekämpfung der wichtigsten Schafkrankheiten. [**Diagnosis and Control of Sheep Diseases**]. —*Tierärztl. Rdsch.* **42.** 263-266 and 421-424. 3 figs. [8 refs.]

The author describes a number of problems in connexion with sheep diseases with which he has met. They include paraplegia in rams given an excessive amount of lucerne hay rich in protein ; illness and deaths in rams in high condition, transported by railway in hot weather ; temporary breeding failure in overfed and housed rams, and emaciation of undetermined origin in four-year-old rams.

Abortion in ewes in Germany is usually of dietetic origin, *Salmonella abortus ovis* only causing abortions in about 20 per cent. of cases. Abortion may take place after eating various kinds of food, such as roots, potatoes or rich fodder plants. The foetus dies *in utero* and this is attributed by the author to " protein poisoning ". —J. E.

Piening, C. (1936). Die Forschungen über Geflügelkrankheiten im Jahre 1935 unter Berücksichtigung von Zucht- und Haltungsfragen. [**Research on Poultry Diseases in 1935**].—*Berl. tierärztl. Wschr.* **52.** 362-364. [Num. refs.]

A survey of the progress of research during the year. Of the bacterial diseases, salmonella infections have received most attention, especially infection of ducks with potential food-poisoning strains [*V. B.* **5.** 373, 450, 604 and 652]. Striking points are the large number of farms infected and the fact that carrier ducks appear healthy. The study of fowl paralysis and of avian leucosis has proceeded systematically but, whilst the author considers that the theory of virus causation gains ground, opinions differ as to whether the two conditions are caused by the same or by different viruses. The theory of a bacterial origin advanced particularly by American workers is mentioned [*V. B.* **5.** 645 and **6.** 447]. The study of therapy for these diseases continues, though it is generally agreed that the logical method of control consists of the elimination of all breeding lines known to be susceptible to the affections.

From the farmer's point of view, contagious coryza is of great economic significance. The aetiology of this disease is uncertain, both a virus and a haemophilus-like bacterial organism having been implicated [*V. B.* **3.** 471, **5.** 232, 471, 472, 577 and 602, also **6.** 232]. Incidence is associated with bad conditions of hygiene. The danger of psittacosis, particularly to laboratory workers, is emphasized. Little progress has been made in the study of blackhead. The cause is well-known, and therapy is unreliable and uneconomic. Control consists in prevention by hygienic measures.

Research along zootechnical lines has produced a new method of sex-recognition in day-old chicks which is claimed to be extremely accurate and entails a minimum of handling of chicks. Further information has been obtained regarding improved methods of feeding. Endocrine studies have shown that the administration of ovarian hormone produces earlier sexual maturity and increased egg production.—E. J. Pullinger.

Card, L. E. (1936). **The Economic Significance of the Mortality Problem in Poultry.**—*Vet. Med.* **31.** 72-73 and 77. 1 photograph.

The mortality in several laying trials during the past five years or longer ranged from 20 to 40 per cent. Figures are also given indicating the percentage mortality in commercial and farm flocks. In each case an increase is shown during recent years. It is considered to be much influenced by the incidence of non-infective diseases.—F. H. Manley.

Teichmann. (1936). Erfahrungen in der Bekämpfung des ansteckenden Verkalbens (Abortus Bang) und der Trichomonadenseuche des Rindes. [**Experi-**

ence in Control of Bovine Contagious Abortion and Bovine Trichomoniasis]. —*Tierärztl. Rdsch.* **42.** 416-418.

The author gives the results of two years work on the eradication of bovine contagious abortion under the state control scheme for Saxony, which was begun in March, 1934.

Systematic blood tests were very valuable, but could not be relied upon to prevent the introduction of infection into a herd. The eradication policy (quick removal of reactors from the herds) succeeded with small and medium-sized herds, which had been infected for some time, so that a fair degree of immunity existed in them, but the policy did not succeed with freshly infected herds, possessing no acquired immunity.

The maintenance of separate reactor and non-reactor units within the herd succeeded in holding up the spread of infection in small herds: here also the greatest success was obtained in chronically infected herds. It was often found that with tests at intervals of four months detection of newly infected animals was too slow, with the result that they were able to spread the infection for some time before being discovered.

Live vaccine was used in severely infected herds with beneficial results; moreover its use, by hastening the course of infection in a herd, brings it quickly into a condition suitable for the application of the eradication method. The author states that in the initial appraisal of a herd the decision to use any one of the three methods referred to above should be based on a clinical examination [the meaning of " clinical " is not clear: presumably it includes consideration of the history of the animals], plus blood testing, and not on the latter alone.

The 1934 order has been superseded by a new one which came into force in April, 1936. The use of live vaccine has been restricted to special cases, such as freshly and severely infected herds. This decision was welcomed by participants in the discussion of the author's paper [some were, however, in favour of chemotherapy of brucella infection which appears to throw doubts on their competence. —Ed.].

Zieger described the use of a vaginal ointment containing pyoktamin, alum, zinc sulphate and oak bark powder in the treatment of vaginitis, including that caused by trichomonads.—J. E.

Brill, J. (1935). Choroby przychówku krów. W swietle kazuistyki zakladu bakterjologji wydzialu wet. uniwersytetu Józefa Pilsudskiego w Warszawie. [**Diseases of New-Born Cattle in the Country Districts of Warsaw Province**]. —*Wiad. weteryn.* **14.** 517-532. 2 tables. [French summary].

The bacteriological examination of 62 aborted foetuses showed *Brucella abortus* in 53·2 per cent. of cases, various other organisms in 8·02 per cent., and negative results in 38·75 per cent. The serologic examination of 218 cows, 8 bulls and 30 calves gave altogether 166 positive, 67 negative and 23 doubtful results. The bacteriological examination of 26 new-born calves which died soon after birth showed a coliform septicaemia in 42·3 per cent. of cases and other organisms in 57·7 per cent. The strains of *Bact. coli* were examined by modern differentiation methods, but it was impossible to find the type responsible.

—K. Szczudłowski (Lwów).

Pojer, G. (1936). La vaginite granuleuse existe-t-elle au Ruanda? [**Granular Vaginitis in Ruanda, Belgian Congo**]. —*Bull. agric. Congo belge.* **27.** 60-64.

The author considers that granular vaginitis, as known in Europe, does not occur in the Belgian Congo.—J. E.

Emmel, M. W., & Knapp, B., Jr. (1936). **Kinky Tail in Cattle.**—*J. Amer. vet. med. Ass.* **88.** 630-632. 4 figs. [2 refs.]

Four red poll calves were observed to have tails with a kink in the lower part : this was due to an affection of one or more adjacent pairs of vertebrae, which had in all cases fused together at an angle by the end of six weeks after birth. The author suggests that the condition is hereditary.—J. E.

I. Lund, L. (1936). Ein Beitrag zu den Leukosen der Säugetiere. [**The Mammalian Leucoses**].—*Dtsch. tierärztl. Wschr.* **44.** 175-177.

II. Heidrich. (1936). Ueber das Vorkommen der Rinderleukose in Sachsen. [**Bovine Leucosis in Saxony**].—*Ibid.* 227-232. 4 tables, 2 charts, 1 map. [1 ref.]

I. Of all the leucoses of domestic animals, lymphadenosis of cattle is the commonest ; it may be accompanied by a normal, anaemic, aleucaemic, subleucaemic or leucaemic blood picture. In calves, leucosis is usually a leucaemic lymphadenosis with generalized enlargement of the lymphoid tissue in the body.

In swine, leucaemic lymphadenosis is commoner than myelosis, and in dogs lymphadenosis with a neutrophile leucocytosis is the commonest form of leucosis.

II. The incidence of bovine leucosis has steadily increased in Saxony during the last 12 years : 867 cases were observed in 1934. The disease is commonest in cows between the ages of five and eight years. More cases are reported in the eastern part of Saxony than in the centre or west. There is no significant seasonal fluctuation in incidence. [The disease is characterized by progressive enlargement of the lymph nodes followed by gradual emaciation : it seems to be far more common in Germany than elsewhere].—J. E.

Ball, V. (1936). Le syndrome des raideurs congénitales multiples à type quadriplégique dans les deux médecines. [**Congenital Quadriplegic Contractions in Human and Veterinary Medicine**].—*Rev. vét., Toulouse.* **88.** 121-129. 2 text figs., 3 figs. on 3 plates. [1 ref.]

This is a comparative study of congenital contractions of quadriplegic type met with in human and veterinary medicine. The correct designation for this deformity of the human foetus is first considered. The term " contraction " is held to be irregular since no true contraction of muscles or ligaments exists. The author records the results of his studies of the related condition in calves which his work shows to be identical with that met with in the human subject. He finds the condition to be one of muscular dysplasia and that no contraction of muscles is present. The use of the term " contraction " in veterinary medicine, as in human medicine, is thus improper. He suggests the name " multiple rigidity, type quadriplegic " as being more in keeping with the true nature of the deformity. The theories of causation and details of the author's histological and pathological studies of lesions in the calf are given.—C. Davenport.

Tiśćhenko, F. K. (1934). K voprosu o periodičeskoi oftalmii. [**Periodic Ophthalmia**].—*Sovyet. Vet.* No. 10. pp. 59-62. 6 tables.

The author, after remarking upon the differences of opinion among foreign authors as to the aetiology of periodic ophthalmia, gives the results of his own work. He had under observation 73 affected horses, their ages ranging from 3 to 15 years. 61 of the horses (84 per cent.) were between 5 and 10 years old. The disease was most prevalent in summer. This the author attributes to the presence during that season of *Parafilaria multipapillosa* in the skin, which he

considers might invade the vessels of the eye though there is no record of the finding of eyes containing the worms. Out of the 73 horses under observation, 68 per cent. had been infested with *P. multipapillosa* during the summer. The other 32 per cent. had no sign of infestation, but had chronic ophthalmia. The author describes the symptoms of a mild case. He states that the disease lasts for 5 to 8 days in a mild form, after which it either merges into convalescence or takes a more severe form. The symptoms of the severe form are described in detail. Its duration is from 12 days to (rarely) a month, or even six weeks.

A number of remedies was tried but without success. 65 per cent. of the horses became blind and the sight of the remaining 35 per cent. was impaired.

HERTZ, J. (1936). **Studies on the Healing of Fractures.**—*Acta path. microbiol. scand.* Suppl. 28. pp. 286. 82 figs., 9 tables. [Numerous refs.] [In English].

A historical survey is given of the relationship of vitamins to the healing of bone fractures, and a description of special forceps designed to produce in guinea pigs and rats a subcutaneous fracture of the fibula without displacement of the fragments. Normal healing of fractures in guinea pigs on an adequate diet begins with a traumatic inflammation leading to the formation of granulation tissue containing many collagen fibrils. Distinction is made between direct and enchondral ossification, the latter passing through the transitional stage of cartilage formation. In scorbutic guinea pigs fracture healing is characterized by the late appearance of the traumatic inflammation and a scarcity of collagen in the granulation tissue. In the callus the trabeculae are poorly developed but ossify more quickly than in normal animals. No cartilage is formed in the callus in the scorbutic animal. [The expression " traumatic injury " is used to cover the strictly localized inflammation at the site of injury].

In the rat normal healing takes place more rapidly than in the guinea pig and cartilage in the callus plays a more important part. Normal healing is found under conditions of B_1 and B_2 deficiency. On vitamin A-deficient diets the fracture haematoma subsides more slowly and there is a considerable inhibition of the cartilage formation in the callus. Newly formed cartilage ossifies exclusively through enchondral ossification and time deposition occurs as in normal animals.

In rachitic animals there is a hyperproduction of osteoid tissue and of cartilage which undergoes enchondral ossification producing much osteoid tissue but the capacity for actual ossification is greatly reduced or almost lost. The ends of the fragments undergo necrosis resulting in large masses of cartilage, like callus, but the fracture does not consolidate. Under conditions of both A and D deficiency healing occurs as in avitaminosis A alone.

Finally, with a poorly balanced salt mixture but with toxic doses of vitamin D, the callus is poorly vascularized but richly supplied in collagen ; ossification takes place more rapidly than usual. Cartilage is formed in normal amounts but does not undergo enchondral ossification.—ALFRED EDEN.

BOSMAN, V. (1935). **A Freak Merino Fleece.**—*Onderstepoort J. vet. Sci.* **5.** 517-518. 2 figs.

A freak fleece of a merino ewe is described. The sheep had a distinctive band growing transversely across the back, stretching towards the belly region. The fibre length, fibre fineness, crimping, number of fibres growing per unit area of skin, and the wool production per unit area of skin are compared on the normal fleece and on the freak region. Marked differences are shown between the freak region and the normal skin.

Amundsen, H. (1936). Smittsom hønselammelse, neurolymphomatosis gallinarum. [**Fowl Paralysis**].—*Norsk VetTidsskr.* **48.** 38-47. 3 figs. [2 refs.]

The main part of this article is a survey of fowl paralysis, as it is generally described in the literature. As an addendum the author reports two outbreaks of the disease encountered in 1935 in Norway, its first reported occurrence in that country.—Gustav Naerland (Oslo).

Leslie, A. (1935). **Rickets of Young Sheep in New Zealand, with Particular Reference to Management, Feeding and Worm Control.**—*Bull. Canterbury agric. Coll., N.Z.* pp. 8. 1 table.

Rickets is a common trouble amongst weaned lambs and hoggets in the Canterbury district on a variety of pastures and feed crops. The cause is claimed to be mineral deficiency, frequently complicated by parasitic infestation and possibly, on occasion by vitamin D deficiency. Ram hoggets are more prone than females on account of their increased weight and of the forcing measures adopted.

The effect on teeth is noticeable, for severe rickets interfered with size, growth and general appearance of permanent teeth. Attrition of incisors occurred prematurely and teeth often fell out before the animal was full-mouthed.

From experiments conducted at Lincoln College there is a suggestion that eversion of the vagina may be due to earlier rickets in the young ewe hogget.

Various mineral mixtures and cod-liver oil are advised where rickets is likely to take place.—C. S. M. Hopkirk.

Sienczewski, S. (1936). Enzootja zmiekczenia kosci (lomikostu) u bydla rogatego w okolicy aleksandrowa kujawskiego. [**Osteomalacia in Cattle in Poland**]. —*Wiad. weteryn.* **18.** 67-74. 1 table. [French summary].

The author gives details of 43 cases of osteomalacia in cattle, which occurred last year at Aleksandrów Kujawski in Poland. The disease seemed to be connected with the drought in 1934, and with deficient feeding. Horses and pigs were not affected. The most serious symptoms occurred after calving, affected cows being unable to rise and becoming emaciated. Mild cases recovered after suitable feeding.—K. Szczudłowski (Lwów).

Hykes, O. V., & Diakov, F. A. (1935). Učinek organického a anorganického jodu na výměnu látkovou, jakov i na vzrůst a zdravotní stav zvířat. [**The Influence of Organic and Inorganic Iodine upon the Metabolism, Growth and Health of Animals**].—*Biol. Spis. vys. Sk. Zverolék.* **14.** 1-12. 2 tables. [19 refs.] [English summary].

An organic iodine preparation (" thyreoidin ") administered to white rats *per os*, even in very small doses, caused the complete disappearance of glycogen from the liver, together with an increase in the weight of the liver.

Potassium iodide and sodium iodide administered *per os* to rats kept on a deficient diet caused the disappearance of glycogen from the liver, whereas they had no effect upon rats kept on normal diet. Animals kept in normal nutritive conditions showed an increase in weight after administration of an organic iodine preparation, whereas those kept on deficient diet showed a decline in weight. —E. Přibyl (Brno).

I. Shute, E. (1936). **The Relation of Deficiency of Vitamin E to the Anti-Proteolytic Factor found in the Serum of Aborting Women.**—*J. Obstet. Gynaec.* **43.** 74-86. 2 figs. [Numerous refs.]

II. Watson, E. M. (1936). **Clinical Experiences with Wheat Germ Oil (Vitamin E).**—*Canad. med. Ass. J.* **34.** 134-140. 6 tables. [15 refs.]

III. Rowlands, I. W., & Singer, E. (1936). **Gonadotropic Activity of the Pituitaries of Vitamin E Deficient Rats.**—*J. Physiol.* **86.** 323-326. [10 refs.]

IV. —. (1936). **The Functions of Vitamin E.**—*Brit. med. J.* April 18th. 801. [3 refs.]

I. Much work carried out on animals has shown a close relationship between abortion and vitamin E deficiency, while it has been found that in 70 per cent. of women aborting spontaneously the blood sera display a characteristic resistance to proteolysis in tryptic digestion. Shute tried to correlate the above findings, and found that the blood sera of rats on vitamin E-free diets developed in four months the ability to resist digestion by tryptic ferments and that administration of vitamin E overcame this resistance of the sera. He also found that the change in blood sera is approximately coincident with the state of vitamin E deficiency as assayed by standard breeding tests. It is suggested that vitamin E is another factor in the body which holds oestrin in equilibrium during normal pregnancy.

II. This paper details the actual clinical experience of the writer in the treating of abortion in women by means of wheat germ oil, – the essential factor in the oil being vitamin E. In all, 65 cases were treated and the results indicated that where previously there had been a history of abortion the patients produced healthy living offspring after treatment. Where abortion had been threatened, administration of the wheat germ oil allowed the pregnancy to proceed uninterrupted. No case of sterility, however, responded by becoming pregnant.

III. By injecting extracts of the pituitaries of vitamin E-deficient and of control rats into oestrous rabbits the authors found that vitamin E deficiency caused a definite decrease in the capacity of the pituitary body of the non-pregnant rat to cause ovulation, the luteinizing or ovulating substance being presumably decreased. A similar condition seemed to occur in early pregnancy. Deficient rats which had subsequently recovered on a normal diet were found to have a normal amount of gonadotropic substance in the pituitary.

IV. This is a brief résumé of the various theories regarding the functions of vitamin E and particularly of those expressed in the three papers abstracted above. The writer points out that one of the functions of the corpus luteum during early pregnancy is to inhibit uterine contraction, so that there may be a deficiency of corpus luteum secretion in cases of habitual or threatened abortion, which may be overcome by injection of a corpus luteum extract. He emphasizes, however, that further investigation will be necessary to justify the conclusion that the same effect can be produced by administration of a pregnancy urine extract, which will ensure the normal activity of the corpus luteum, as by giving vitamin E to provide for the normal secretion of luteinizing hormone from the pituitary itself.—J. Stewart.

PUBLIC HEALTH.

I. Pierce, C. C. (1935). L'état actuel du contrôle du lait aux Etats-Unis. [**Milk Control in the United States**].—*Bull. Off. int. Hyg. publ.* **27.** 72-79. 1 table. [1 ref.]

II. Reiter. (1935). La fourniture du lait en Allemagne, considérée au point de vue de l'hygiène de l'état actuel de la pasteurisation du lait. [**Milk Control and Pasteurization of Milk in Germany**].—*Ibid.* 2203-2215. [3 refs.]

III. Robertson, W. A. N. (1935). Le contrôle du lait en Australie. [**Milk Control in Australia**].—*Ibid.* 2216-2217.

IV. Lutrario, A. (1935). Le problème du lait alimentaire en Italie. [**Milk Control in Italy**].—*Ibid.* 80-102. 1 table. [6 refs.]

V. Roeland, C. (1936). La production et le contrôle obligatoire du lait en Italie. [**Production and Control of Milk in Italy**].—*Rev. Path. comp.* **36.** 541-561 and 703-724. [1 ref.]

I. As the result of a questionnaire sent to towns of more than 10,000 inhabitants, it has been ascertained that, apart from tuberculosis, undulant fever and enteritis of infants, the mean annual number of milk-borne epidemics reported during the ten years following 1924 was 43.

It is generally admitted that tuberculosis of the non-respiratory organs is, in a large measure, of bovine origin. In 1917 the tuberculin test was first seriously applied to cattle, the number of animals tested being 20,000, increasing to 13,000,000 in 1933. The average number of reactors has decreased from over 4 per cent. to less than 2 per cent.

The pasteurization of milk is recognized as the most efficient protection against typhoid, diphtheria, septic sore throat and undulant fever. In 1931 the percentage of milk pasteurized was 87·5 and during the next ten years it is estimated that more than 95 per cent. of the milk sold in towns with more than 10,000 inhabitants will be pasteurized.

The aim of the Milk Ordinance in force in the U.S.A. is to encourage the production of " Certified Milk " and " Raw Milk of A degree ", but the public health service insists that all milk must be pasteurized or boiled before being consumed. 600 American municipalities, dispersed through more than 30 of the 48 states, have adopted the compulsory pasteurization of milk.

The rapid progress made in the suppression of tuberculosis in cattle, the more frequent pasteurization of milk and the adoption by municipalities of uniform and efficacious sanitary regulations, point to the probability that, in the course of the next generation, the U.S.A. will have eliminated disease caused by milk.

II. The law in Germany forbids persons with illnesses which may easily be spread by milk to have any contact either with the production of milk or with its sale. Cows suffering from advanced tuberculosis, or tuberculous lesions in the udder, uterus or intestines, must not be used for the production of milk. The milk of cows suffering from F. and M. disease, any form of tuberculosis, contagious abortion or streptococcal mastitis, must be pasteurized. Cleaning of the teats and dry milking are enforced. Milkers must wear clean overalls and must wash their hands before milking. The regulations provide for the filtering and cooling of the milk. Milking animals must be examined four times a year by a veterinary surgeon and the milk must be submitted to bacteriological examination. Persons engaged in milking must be examined annually by a state doctor.

The German Milk Union has extensive powers concerning the redistribution of milk and the fixing of milk prices. It insists on the equitable distribution of milk to the different districts and prevents the sending of milk on needlessly long journeys.

A great development in the process of the elimination of bovine tuberculosis, streptococcal mastitis and epizootic abortion is taking place.

When the milk is controlled the cows must be examined by a veterinary surgeon four times a year and, in the case of superior milk, 12 times a year. Bulk samples taken at the dairies are examined every month for quality and bacterial content. Controlled milk and superior milk are sold in the raw state. Ordinary milk is pasteurized before sale in bottles.

III. The control of milk in Australia is jointly exercised by the Departments of Public Health and Agriculture. There is a lack of uniformity in the regulations.

The tuberculin testing of milch cows is not compulsory except at Canberra. In other towns special milk is obtained from cows which pass the tuberculin test. Generally speaking, about 5 per cent. of the cows are affected. The pasteurization and bottling of milk are not compulsory.

In Melbourne there is an efficacious system of bacteriological examination of milk. If the bacterial content exceeds 2,000,000 per c.c., enquiries are made at the place of production. This system has given very satisfactory results. In 80 per cent. of the milk from these towns, the count gives a lower figure than 1,000,000 per c.c.

IV & V. A comprehensive law for the control of milk production in Italy was enacted in 1929 and regulates all stages between production and sale to the public. Rules for the construction of byres and dairies were included : the cows were placed under the supervision of veterinarians and the farm and dairy personnel under medical supervision to ensure the absence of contamination of the milk produced.

Central dairies have been founded in many districts and, where they exist, independent retailing is prohibited. Prices are under central or local government control. For raw milk the rules are strict. It must be produced under special authorization, from cattle which have passed the tuberculin test repeated every six months ; the animals are marked and inspected every two months by a veterinary surgeon ; the personnel handling the milk are vaccinated against typhoid fever and are examined every two months by a medical officer of health.

Generally speaking raw milk controlled as described above is reserved for children. 95% or more of the milk produced is pasteurized.—Brennan DeVine.

Generoso, J. D. (1935). **Bacterial Contents of Raw and Pasteurized Milk from Alabang Stock Farm Examined from August, 1934, to August, 1935.**—*Philipp. J. anim. Indust.* **2.** 379-390. 4 tables. [1 ref.]

In order to encourage local industries, the Bureau of Animal Industry of the Philippine Government established the Alabang Dairy Farm, to improve the dairy cattle and the quality and cleanliness of the milk. Periodical testing for tuberculosis and mastitis was carried out in order to eliminate these diseases. Bulk milk and individual samples were examined for bacterial content. Counts made immediately after milking and immediately before pasteurization were as follows :- morning milk, 6,000,000 and 4,100,000 ; afternoon milk, 35,000,000 and 28,000,000. Cleaning of the cattle and rapid cooling of the milk led to a decrease of the bacterial content, the count being 4,300 per c.c. for the afternoon milk.

Following the introduction of sterilization of the utensils and of cleaning the sheds and cows before milking, the counts made from September, 1934 to June, 1935 ranged from 5,500 to 86,000 per c.c. High bacterial counts were found during the hottest months, April, May and June.

The " holder " process was used for pasteurization at 62°C. for 30 minutes and the milk was immediately cooled to 12·2°C. in a Bestov cooler.

The milk in an 18-litre container, even if placed in the refrigerator, does not cool fast enough to prevent the multiplication of bacteria. The earlier pasteurization takes place after milking, the fewer bacteria are found in the milk.—B. DeVine.

Davis, D. J. (1936). **Staphylococcic Mastitis [Human Milk-Borne Disease].**—*Vet. Med.* **31.** 60-61.

Two outbreaks of sickness in human beings are described, the cause in each

case being the consumption of milk from cows suffering from a staphylococcal mastitis.—F. H. Manley.

THERAPEUTICS AND MATERIA MEDICA.

Kraneveld, F. C., & Djaenoedin, R. (1936). Onderzoek over de prophylactische en therapeutische waarde van trypaflavine tegen septicaemia haemorrhagica. [**Curative Value of " Trypaflavine " in Haemorrhagic Septicaemia**].—*Ned-ind. Bl. Diergeneesk.* **48.** 48-86. 8 tables, 10 graphs. [5 refs.] [English and German summaries.]

Research on the M.L.D. of " trypaflavine " was first carried out on rabbits. Later, more rabbits and a number of buffaloes were artificially infected with a culture of pasteurella isolated from a buffalo, and were injected also with solutions of " trypaflavine ", calculated to represent the maximum safe doses (1) at the time of infection ; (2) just before infection, or (3) just after.

In no case was it possible to save the life of the animals and it is concluded that " trypaflavine " is of no value in the treatment of haem. septicemia.—J. E.

Carmichael, E. B. (1936). **Sulfocyanate Treatment of Mange in Guinea Pigs.**—*Science.* **83.** 304.

For controlling mange [type not given] in stocks of guinea pigs the author recommends a 2 per cent. solution of lauryl sulfocyanate in cottonseed oil. Good results were also obtained with a less pure preparation sold under the name of " loro ". Two treatments are sufficient.—J. E.

Howarth, J. A. (1936). **The Prevention of Myiasis in Wounds of Domestic Animals by the Use of " Bone Oil ".**—*J. Amer. vet. med. Ass.* **88.** 628-629.

Bone oil is a by-product of " bone coal ", and is a tarry, thick fluid with a strong adhesive action on skin and wound surfaces. It has a strong odour and repels insects for several days from wounds treated with it. It has been successfully used on horses, cattle, sheep and swine.—J. E.

I. Fraser, W. A. C. (1935). **The Comparison of the Efficiency of Anthelmintics.**—*Parasitology.* **27.** 465-475. [4 refs.]

II. Lamson, P. D., & Brown, H. W. (1936). **Methods of Testing the Anthelmintic Properties of** *Ascaricides.*—*Amer. J. Hyg.* **23.** 85-103. 1 fig., 6 tables. [Numerous refs.]

I. This paper deals with the method of expression of the relative efficiency of anthelmintics. It has nothing to do with the action of any special drug on any special parasite. The author is dissatisfied with the procedure devised by Roberts (1932) and by Seddon and Ross (1928) for comparing the effectiveness of anthelmintics because, in arriving at a decision, they ignore the variation in the degree of infestation existing in untreated animals. He presents an alternative method of his own in which calculation is based on a mean reading of the degree of infestation shown by a series of animals before and after treatment, which are all equally susceptible to a given parasite, are of similar age and exposed to the same infection risks. His object is to obtain a mean value for the efficiency of a drug which shall be entirely independent of any variation found in the initial or residual infestation of the treated host. He provides a complicated formula on

which calculation is to be made together with an algebraic expansion of the same. He then takes the experimental results obtained by ROBERTS and by SEDDON and ROSS and recalculates the efficiency of the anthelmintics reported on by them according to his own formula.

II. The authors point out that there is no absolute method of determining the effectiveness of an anthelmintic and that tests carried out against helminths in animals are no true guide to the action of a drug on a related parasite in man. They describe their own technique for establishing a criterion of anthelmintic action. The experiments fall into two groups, *viz*, *in vitro* tests and *in vivo* tests.

Ascaris lumbricoides of the pig was employed for the *in vitro* experiments. The method of collection, washing and selection of worms is described. 0·9 per cent. saline solution, changed twice daily, was the medium employed for their maintenance. In the search for an index of anthelmintic action, chemical tests such as oxygen consumption, acid production and glycogen depletion were tried, but finally discarded in favour of motility reactions.

The method of application is given in detail. Live worms were immersed in varying dilutions of the solution to be tested, for varying lengths of time. The worms were subsequently examined for survival.

The *in vivo* experiments are less thoroughly dealt with, and this section of the paper contains nothing of an original nature. There is a note on the value of the Stoll method of egg counting as a means of judging the action of an anthelmintic against a parasite in the human host.—C. DAVENPORT.

HUTSCHENREITER, C. (1936). Das Epiphysan G. Richter in der Hypersexualitätsbekämpfung beim Pferde. [**Treatment of Hypersexuality in Horses by " Epiphysan "**].—*Wien. tierärztl. Mschr.* **23.** 231-237. [3 refs.]

The author records some encouraging results in the treatment of hypersexuality in thoroughbred mares and stallions by " epiphysan ", an extract of the pineal body, which has an anti-gonadotropic action.—J. E.

BENESCH, F., & STEINMETZER, K. (1936). Ueber die Registrierung der Uteruskontraktionen beim lebenden Rind nach Lentinwirkung. [**Uterine Contractions in Cattle caused by Lentin**].—*Wien. tierärztl. Mschr.* **23.** 225-231. 2 figs. [4 refs.]

The authors tested the action of lentin (a cholin ester of carbaminic acid) on the isolated as well as on the living uterus of puerperal cows, using a uterine balloon and closed air pressure system to record the contractions graphically [as in a former experiment with pituitary extract, etc. – *V. B.* **3.** 436.], proving it to be a powerful ecbolic. Lentin may be administered subcutaneously, but it is preferable to give it epidurally. It is indicated in atony and in delayed involution of the uterus.—J. E.

KRANENBURG, J. (1936). De behandeling van agalactia bij paarden en zeugen, door middel van prolan B. [**Treatment with Prolan of Low Milk Yield in Mares and Sows**].—*Tijdschr. Diergeneesk.* **63.** 185-188. [English, French and German summaries].

In mares and sows, chiefly primiparae, which have an insufficient milk yield though otherwise healthy, the author has found that injections (subcut.) of prolan B have a strong galactagogue action. The dose is 250 rat units for mares and 125 for sows, and the increase in the size and function of the udder is noticeable even half an hour after the injection. Thereafter the milk yield was normal.—J. E.

POISONS AND POISONING.

I. —. (1936). **Dangers Associated with Locust Poisoning.**—*Quart. Bull. Hlth Org. L.o.N.* **5.** 157.

II. —. (1936). **The Dangers of the Locust Campaign to Stock.**—*Ibid.* 159-160.

I. This is a report of a committee presumably set up to investigate the possibility of poisoning of human beings and animals from the spraying of sodium arsenite over the veld for the control of locusts. It is recommended that a method of destruction less dangerous to human and animal life should be adopted.

II. A heavy mortality in cattle and sheep has resulted from the use of sodium arsenite as a locusticide. The use of sodium thiosulphate is the most effective treatment in cases of arsenical poisoning.—G. D. Shearer.

PHYSIOLOGY.

Vacek, T., & Srnetz, A. (1935). K nervovému řízení dechu, srdce a tlaku krevního u koně. [**Nervous Regulation of Respiration, Heart and Blood Pressure in the Horse**].—*Biol. Spis. vys. Sk. Zverolék.* **14.** 13-27. 7 figs. [6 refs.] [German summary].

Stimulation of the cephalic and thoracic ends of the sympathetic has no effect on the blood pressure. Stimulation of the cephalic end of the sympathetic causes a slight decline in the frequency of the pulse, whereas the stimulation of the thoracic end causes an increase in its frequency. Stimulation of the vagus causes a pause in the breathing and in the activity of the heart, together with a decrease of blood pressure.—E. Přibyl (Brno).

Richter, J. (1936). Der Einfluss der Kastration auf die Milch- und Fleischleistung der Kühe. [**Effect of Castration on the Milk-Yield and Flesh-Formation of Cows**].—*Berl. tierärztl. Wschr.* **52.** 277-280 and 293-298. 1 fig., 3 tables, 2 charts. [Numerous refs.]

The author carried out a controlled experiment on a total of 67 cows aged between 3 and 13 years, in order to find out whether castrated cows give an increased milk yield and put on more weight than uncastrated cows. 33 cows were castrated, and they and the controls were kept under observation for about two years, detailed records of their lactations and weights being kept. There was a slight increase in milk yield and a more pronounced gain in weight in the castrated cows, as compared with the controls, but the author considers that it is insufficient to authorize the adoption of castration as a routine treatment for old cows.—J. E.

Schutte, D. J. (1935). **Factors Affecting the Growth of Range Cattle in Semi-Arid Regions.**—*Onderstepoort J. vet. Sci.* **5.** 535-617. 43 figs., 25 tables. [Numerous refs.]

200 unimproved cows common to the semi-arid region of the Northern Transvaal, Union of South Africa, were divided at random into five equal groups and bred to bulls of the following breeds :– Hereford, Shorthorn, Sussex, Aberdeen Angus and Afrikander. The half-bred progeny were kept under ordinary ranching conditions. Liveweights were recorded at birth and at weaning and thereafter at bi-monthly intervals over a period of four years, and 13 body measurements commencing with animals of different ages were taken bi-monthly over a period of 28 months. The relevant data for the progeny of three years' breeding, involving a total of 176 animals, were analysed from the standpoint of general growth and

breed and sex differences, using the method of analysis of variance and co-variance. Growth in weight is strictly seasonal. Growth in body dimensions is also influenced by season but to a less extent. Significant differences between the sexes exist from birth. Significant breed differences are shown. Hereford and Sussex half-breds show the most rapid growth and greatest ultimate development, exceeding the Aberdeen Angus and Afrikander in weight and body measurements; Shorthorn half-breds occupy an intermediate position. The relative importance of genetic and environmental factors is discussed and the proportion of the variance in certain body dimensions due to genetic and environmental factors is determined. The importance of adequate nutrition for growth is shown.

Petrych, J. (1936). Rozpoznanie wczesnej ciazy u krów zapomoca wyciagu wodnego z tylnego plata przysadki mózgowej. [**Pregnancy Diagnosis of the Cow using Injections of Pituitary Extract**].—*Wiad. weteryn.* **18.** 89-101. 1 fig., 1 table. [Numerous refs.] [French summary].

It is suggested that in cows at a gestation period later than the 16th day the intravenous injection of pituitary extract provokes a uterine contraction palpable in the rectum within two minutes. Cows which are not pregnant do not react. —K. Szczudłowski (Lwów).

King, C. G. (1936). **Vitamin C, Ascorbic Acid.**—*Physiol. Rev.* **16.** 238-262. [Numerous refs.]

This is a very comprehensive review of the literature which has appeared during the past four years on the chemistry and physiology of vitamin C. It deals first of all with its identification, isolation, synthesis and general chemical properties. The usual methods of analysis and biological assay are fully discussed. The many roles it plays in physiological reactions, such as its interrelationship with enzymes and its function in plant and animal life, are described. In the case of animals its function is two-fold, being concerned in both the mechanism of respiration and in the regulation of the colloidal condition of intracellular substances. It is present in all tissues. The review is completed by sections on the relation of vitamin C to the general food supply and to human health.—J. Stewart.

TECHNIQUE.

Goosmann, C. (1936). **Dark-Field Illumination in the Diagnosis of Tuberculosis and Malaria.**—*J. lab. clin. Med.* **21.** 421-424. 5 figs. [6 refs.]

For the demonstration of tubercle bacilli in dry films the author has used the dark field method. With Ziehl-Neelsen-stained films the pus cells etc. are not visible, but the fuchsin-stained bacteria fluoresce and are readily detectable, particularly in fields containing very few organisms. The figures clearly explain the principle of the method. This method of examination is also suitable for the diagnosis of malaria in films stained by Giemsa's method.—J. E.

MISCELLANEOUS.

I. Wille, R. (1936). Das neue Reichstierzuchtgesetz. [**The New National Animal Breeding Law of March, 1936 (Germany)**].—*Tierärztl. Rdsch.* **42.** 329.

II. —. (1936). Reichstierärzteordnung vom 3. April 1936. [**Germany : the**

Reich Veterinary Ordinance of April, 1936].—Suppl. to *Dtsch. Tierärztebl.* **3.** No. 9. pp. 11. [Also published as suppl. to *Reichsgesundheitsblatt.* **11.** No. 17].

III. EICKEL, F. (1936). Polizeibehörden und Veterinärwerwaltung. [**Police Organization and Veterinary Administration in Germany**].—*Dtsch. tierärztl. Wschr.* **44.** 87-90 and 247-249.

I. The law of 17th March, 1936, provides that only selected males (stallions, bulls, boars, rams and goats) may be used for breeding purposes, and enables certain districts to combine to organize a proper establishment of approved males for the purpose of improving both the health and the constitution of livestock.

II. A new law was introduced on 3rd April, 1936, giving a new constitution to the veterinary profession in Germany. Veterinary surgery is declared to be a profession. No one may use a veterinary title who is not qualified and no one may practise unless licensed. A new provision is that a veterinary surgeon must not divulge any fact discovered during his practice to the detriment of his client, though this is not made a criminal offence. Local veterinary courts are set up to decide veterinary legal questions and professional misconduct. The punishments for the latter are (i) warning, (ii) censure, (iii) fine up to RM.3,000, (iv) declaration that the accused is unworthy to practise the veterinary art. In special cases the decision may be published in the press.

III. The author describes the police organization in Germany and indicates how the veterinary service collaborates with the police in connexion with the breeding of animals, the control of animal diseases, and meat and milk inspection.
—F. BULLOCK.

I. STANG, V. (1936). Das Lehr- und Forschungsgut Klein-Ziethen. [**The Instructional and Research Farm at Klein-Ziethen – for the Berlin Veterinary College**].—*Berl. tierärztl. Wschr.* **52.** 130-132. 4 figs.

II. WALDMANN, O. (1936). Der Riems. [**The Isle of Riems Research Centre**]. —*Ibid.* 132-135. 11 figs.

III. WAGENER, K. (1936). Die Staatlichen Veterinäruntersuchungsämter in Preussen. [**The State Veterinary Investigation Offices of Prussia**].—*Ibid.* 135-138.

I. After the war, a grant was made for the purchase of instructional farms for the veterinary colleges at Berlin and Hanover, the farm acquired for the former being Klein-Ziethen, about 20 miles from Berlin. Up to 1929 it was used mainly as a vaccine and serum institute but later, under the direction of Ministerial-dirigent MÜSSEMEIER, its true function was developed, and at present three-weekly courses of instruction in animal breeding and general farming are held during the appropriate term, groups of students living on the farm 30 at a time. The farm is 400 hectares in extent and has a livestock strength of 45 horses, 115 cattle and over 200 pigs.

II. A description of the Isle of Riems research station, including its history since inception.

III. Up to 1918 three veterinary bacteriological institutes and two veterinary food inspection laboratories existed in Prussia. These were situated at Schleswig, Münster, Merseburg, Berlin and Hanover respectively. After the foundation of the " office " at Potsdam in 1921, the duties of all the pre-existing and future " veterinary investigation offices " were standardized. They include the official diagnosis of diseases for losses from which the state pays compensation, food inspection and general diagnosis and research into important animal diseases. There are now 15 of these " offices " in Prussia.—J. E.

OFFICIAL AND OTHER REPORTS.

NEW ZEALAND. (1936). **Report of the Live-Stock Division.** [BARRY, W. C.]—*Rep. Dep. Agric. N.Z. 1935-36.* pp. 19-26. 3 tables.

DISEASES OF HORSES.

No contagious disease occurred except a few cases of strangles.

DISEASES OF CATTLE.

TUBERCULOSIS.—6,527 cattle were destroyed under the Stock Act. Of 478,963 cattle killed in meat works, 6·52 per cent. were affected in varying degree. Of 14,423 cattle tested with tuberculin, 7·9 per cent. reacted.

ACTINOMYCOSIS.—828 animals were condemned.

BLACKLEG.—20,491 calves were vaccinated.

ANTHRAX.—No cases occurred.

JOHNE'S DISEASE.—Ten new farms were found with affected cows on them. Johnin prepared by Dunkin was used in an attempt to eradicate the disease in affected herds.

MASTITIS.—The Control Scheme (a monthly examination of milk samples from all the cows in the herd) is being increasingly made use of by the farmer.

CONTAGIOUS ABORTION.—This disease is so widely disseminated that control measures alone can be adopted, eradication being impossible.

TEMPORARY STERILITY.—There seemed to be less of this condition reported than in previous years.

Paspalum STAGGERS.—A serious nervous indisposition amongst stock appeared after a dry summer and during the autumn flush. It was found to be due to ergot infestation of the seed head. This was the first occasion upon which this was noticed in New Zealand.

TYMPANITIS.—Acidulation of drinking water was useless as a preventative.

GRASS STAGGERS.—The use of magnesium sulphate (subcut.) is becoming the usual curative method.

DISEASES OF SHEEP.

PHOTOSENSITIVITY (FACIAL ECZEMA).—Resultant liver damage in sheep affected in the previous year with facial eczema led to unthriftiness and death in many cases.

PARASITIC GASTRO-ENTERITIS.—Considerable loss took place in lambs and hoggets due to seasonal flushes of pasture, leading to ideal conditions for development of the parasitic larvae. Use was made by farmers of nicotine sulphate and copper sulphate as an anthelmintic drench.

ENTEROTOXAEMIA OF LAMBS (PULPY KIDNEY).—There was an increase in this trouble in some parts of the country. A formalinized vaccine reduced losses from 7 to 0·2 per cent.

MYCOTIC DERMATITIS.—Mycotic dermatitis has been observed on several more farms in Canterbury.

CONTAGIOUS ECTHYMA.—A vaccine was tried, with apparently good results, for preventing this disease in hoggets.

SHEEP BLOW-FLY.—Glycerin boric acid treatment is being given a trial in affected districts.

DISEASES OF SWINE.

TUBERCULOSIS.—16·78 per cent. of pigs inspected at abattoirs were found affected in some degree with tuberculosis. This is considered to be due mainly to infected skim milk, the main food of the New Zealand pig.

Pasteurella and Salmonella Infections have been the cause of much pleurisy and pneumonia in pigs.

Sarcoptic mange is well under control.

Diseases of Poultry.

Coccidiosis.—Coccidiosis of pullets was assuming serious proportions in large poultry runs and the department was taking action to prevent spread.

Fowl Pox.—A serious outbreak occurred in the Auckland Province.

—C. S. M. Hopkirk.

New Zealand. (1936). **Annual Report of Wallaceville Veterinary Laboratory.** [Hopkirk, C. S. M.]—*Rep. Dep. Agric. N.Z. 1935-36.* pp. 27-33. 4 tables.

The Laboratory is responsible for routine diagnosis for the departmental field officers and research work on animal disease.

Routine examination was carried out on 9,030 milk samples and specimens. At Hamilton Subsidiary Laboratory 42,615 milk samples were examined.

Diseases of Cattle.

Tuberculosis.—Biological tests were made with whey samples: 75 samples were tested, but only one guinea pig became affected.

Mastitis.—As a result of the Mammitis Control Scheme the percentage of normal cows in herds examined monthly has increased from 50 five years ago to approximately 70.

Sterility.—Examination of semen for morphology of spermatozoa has shown that there is a correlation between the success of conception at first service and the state of the spermatozoa.

An artificial insemination trial was carried out on a number of cows with bulls of known good butter-fat "backing". Unfortunately, the sperm pictures were poor and results of insemination correspondingly bad.

The most important finding was the daily fluctuation of density and motility of semen samples.

Diet and sterility experiments were carried out by Dr I. J. Cunningham on rats [p. 43].

Paspalum Staggers.—A severe ataxia was produced in heifers fed on ergotized seed head of *Paspalum dilatatum*. Staggering occurred in eight days on a diet of 2½ lb. of seed head per day.

Diseases of Sheep.

Photosensitivity.—Hereditary sensitivity was found to occur in a strain of Southdowns. An affected ram bred to two ewes which had previously produced affected lambs, gave one lamb which became sensitive as soon as it commenced eating green pasture. Sensitivity was lost on hay. Native *Hypericum* sp. fed to merino lambs did not produce photosensitivity. A feeding trial has been arranged on a block of country where sheep usually became affected.

Mycotic Dermatitis.—Rabbits were used successfully as diagnostic animals in testing for mycotic dermatitis.

Arthritis.—Lambs were infected with *Erysipelothrix rhusiopathiae* in culture and in pus following severance of the tail. Of 13 lambs used 3 developed typical and chronic arthritis.

Ante-Partum Paralysis.—In an experiment with two similar groups of newly-served ewes – one on poor pasture (group A) and the other on rich pasture (group B) – the incidence of disease (*ante-partum* paralysis and abortions) was correlated with the poor pasture.

Three ewes in group A died and 4 were sick or aborted dead twin lambs. B group had no trouble.

Liver fat of a low iodine value increased in the livers of ewes in A group.

Circling Disease.—The organisms isolated from cases [*V. B.* **1.** 89.] which appear to belong to the new genus *Listerella* were fed in culture to three sheep, causing severe scouring, and in one case death by the fifth day. Ulceration and haemorrhage of the intestinal mucosa had occurred, but beyond small brain haemorrhages no typical brain lesions were found.

Diseases of Swine.

Pleurisy.—*Salmonella suipestifer* and *Pasteurella* were predominant in 204 lungs cultured from cases of pleurisy. Streptococci and *Corynebact. pyogenes* were also found present in many lungs.

Diseases of Poultry.

Leucaemia.—No cases of leucaemia have been produced by filtrate inoculation of birds. Daily inoculation of cultures of salmonella types produced liver lesions somewhat similar to cases occurring in the field.

New Zealand. (1936). **Report of the Chemistry Section.** [Aston, B. C.]—*Rep. Dep. Agric. N.Z. 1935-36.* pp. 64-70. 2 tables.

The following remarks on disease are included in this report :–

" Bush Sickness ".—Analyses of various deposits of limonite and of animal tissues have been made with reference to zinc and cobalt. No cobalt was found in the few pasture samples analysed. Vanadium was not found in limonite samples.

An experiment in the " bush sick " area where zinc, limonite, cobalt and varieties of iron ores were fed, showed that the sheep on different limonite samples or cobalt did well, while the others failed to improve and had to be changed on to cobalt to save their lives.

Iodine Survey.—A survey carried out by means of analysis of the thyroid glands for iodine, has shown no real deficiency in the North Island, but several areas of the South Island require iodine licks to prevent enlargement of the thyroid.

Zinc Poisoning in Pigs.—The suggestion is made that zinc poisoning may occur in pigs on those farms where the skim milk or whey is run over galvanized iron pipe lines for some distance. The zinc is eroded from the pipe and is taken in as zinc lactate by the pigs.—C. S. M. Hopkirk.

New Zealand. (1936). **Report of Nutritional Research Work.** [Cunningham, I. J.]—*Rep. Dep. Agric. N.Z. 1935-36.* pp. 31-32.

Grass Staggers.—The feeding of dolomite tended to prevent the occurrence of grass staggers on farms where the disease is common. Analyses of pastures showed no real deficiency of magnesium in affected as against unaffected farms.

Bones and organs from cows affected with grass staggers showed no deficiency of magnesium. No results were obtained in an attempt to feed cows with magnesium-deficient diet for three months before calving.

Protein and Sterility.—Work on rats showed that certain amino acids are necessary for the development of normal spermatozoa. It is suggested that male sterility usually arises from feeding protein of a poor biological value.

Toxicity of Smuts.—The feeding of rats with pasture smuts (*Ustilago bromivora, U. tritici, Tilletia tritici* and *T. levis*) gave certain results which suggested their toxicity, but the experiments are being repeated.

Jacobine extracted by Dr J. R. Hosking from *Senecio Jacoboea* proved to be toxic for rats.

Vitamin A and D analyses of fish oils and pig foods was continued by Dr Marion Cunningham. Groper liver oil was proved to be exceptionally high in vitamin D, and is suggested as a commercial possibility.—C. S. M. Hopkirk.

British Somaliland. (1936). **The Annual Report of the Veterinary and Agricultural Department for 1935.** [Peck, E. F.] pp. 29. [fcp] [Mimeographed].

This is the first veterinary report to appear since that for 1932 and for a time, up to March, 1935, there was no veterinary office in the protectorate. At that time Mr. Peck was appointed veterinary and agricultural officer, the two departments, hitherto separate, being combined.

British Somaliland is 68,000 square miles in extent, and has an estimated animal population of 1,500 horses, 30,000 cattle, 2,500,000 sheep, 2,000,000 goats, 2,000 donkeys and 1,500,000 camels.

The chief duty of the Veterinary and Agricultural Officer was the medical care of the animals of the Somaliland Camel Corps. Furunculosis was the most troublesome disease, its incidence being considered to be connected with a mineral deficiency, as salt bush browsing effects a general improvement in condition. Surra was present to a slight degree, and was diagnosed by the mercuric chloride test. It was successfully treated with " naganol ". Intestinal parasitism in camels due to *Haemonchus longistipes* was controlled by copper sulphate, using a full bovine dosage. Anthrax in camels and horses was not encountered but is suspected to occur : mass vaccination is projected as a preventive measure.

A fly-borne conjunctivitis and dacryocystitis in horses occurs seasonally. It was treated by the irrigation of the lachrymal duct *via* the nostril from the distal extremity upwards, and the use of string eye shades was found to be useful. No case of horse-sickness was observed.

No outbreaks of rinderpest or F. and M. disease were observed, though the latter may have existed in the west. Cont. bov. pl.-pneumonia occurred in one district, and cont. pl.-pneumonia of goats [cause uncertain] caused losses over a wide area. The loss among the goats was not deplored from the economic aspect, as there is a shortage of pastures.

Other diseases included lip and leg ulceration in sheep, sarcoptic mange in sheep and camels, impaction of the rumen in sheep, ovine haemonchosis, sheep pox and camel pox and an unidentified ringworm-like disease of sheep. Trypanosomiasis in camels is caused in Somaliland by *Tryp. evansi* and is said to be spread by a biting fly of the genus *Pangonia*. It is controlled by " naganol ".

One case of rabies [dog ?] was diagnosed. A collection of ticks was sent to England for identification.

The latter part of the report deals with agronomy, depletion of the soil and soil erosion being the main problems.—J. E.

Southern Rhodesia. (1936). **Annual Report of the Division of Entomology [Min. of Agric.] for Year ending 31st December, 1935.** [Jack, R. W.] pp. 28. Salisbury : Art Printing Works. [8vo].

An intensive campaign to rid the country of tsetse fly and to enlarge fly-free areas has been in action for some years and some 2,000 square miles have been cleared. The year's work is described in detail. The destruction of game, which has a part in the scheme, has been severely criticized, and it is desired to stop it as soon as a new method of eradicating the fly is discovered. Recommendations for a new research project on the bionomics of *Glossina morsitans* are made, and it is hoped that this work will be commenced soon.

The bont tick (*Amblyomma hebraeum*) has recently spread in Matabeleland.

Its control is important, as it is the vector of heartwater. Cases of suspected poisoning of cattle by pentatomid bugs (*Agonoscelis erosa*), which cluster on foliage, are mentioned.—J. E.

SOUTHERN RHODESIA. (1936). **Annual Report of the Branch of Chemistry [Min. of Agric.] for Year ending 31st December, 1935.** [HUSBAND, A. D.]—*Rhod. agric. J.* **33.** 252-272. 6 tables.

The department undertakes cattle dip analysis and toxicological investigations for the veterinary department. The latter were concerned chiefly with tests of soils, plants, etc. sprayed with arsenic to kill locusts. Livestock do not suffer appreciably if they are not overcrowded on land moderately sprayed.—J. E.

FRIESLAND. (1936). Mededeelingen betreffende den Gezondheidsdienst voor Vee in Friesland. Zeventiende Jaarverslag 1 Mei 1935 – 1 Mei 1936. **[17th Annual Report on Animal Health in Friesland, 1935-1936].** pp. 40. 6 tables. [8vo].

The bovine tuberculosis control scheme made further progress, and 200,000 head of cattle were inspected. This represents about 60 per cent. of all cattle in the province. 4,812 herds were free from tuberculosis, the reaction percentage of all the cattle examined being 13. 373 out of 8,305 samples of material examined were positive to bacteriological tests.

Johne's disease was observed in 240 out of 948 faecal samples – an increase over previous years. The author considers that avian tuberculin is a very useful diagnostic agent.

A case of sterility in a bull, due to testicular infection with *Br. abortus*, is described. 14 per cent. of 6,000 cattle reacted positively to the blood agglutination test for this infection, and of 263 cows which reacted at a titre of 1 : 20 the previous year, 125 were negative this year. 109 still gave the same titre, 10 a titre of 1 : 50, and 19 a titre of 1 : 100 or more.—J. E.

FRANCE. (1936). Rapport sur les travaux du Laboratoire militaire de Recherches vétérinaires pendant l'année 1935. **[Report of the Military Veterinary Laboratory, France, for the Year 1935].** [CARPENTIER.]—*Rev. vét. milit.* **20.** 75-86.

This report is in four parts. The first, which is much the longest, deals with contagious conditions in the form of a short account of laboratory work undertaken during the year in connexion with the following diseases :– infectious equine anaemia, strangles, brucella infections, glanders, tuberculosis, anthrax and certain pyogenic conditions. The second part deals with helminth infections, mange and ringworm, and also contains a list of miscellaneous examinations made in connexion with a variety of other diseases. The remaining parts, which are very short, deal respectively with pathological examinations, more particularly in regard to neoplasms, and with a single pregnancy test in a mare.—C. DAVENPORT.

—. (1936). Statistiques vétérinaires de l'armée pour l'Intérieur, l'Algérie, la Tunisie, le Maroc et le Levant. **[Army Veterinary Statistics for France, Algeria, Tunis, Morocco and the Levant for 1934].**—*Rev. vét. milit.* **20.** 5-73. 24 tables, 12 graphs.

This is the report of the French army veterinary service for the year 1934. It consists mainly of a series of statistical tables dealing with every aspect of animal inefficiency from the military viewpoint. The total number of animals covered by the report is given as 117,375 ; this includes animals of the army stationed in

France and those belonging to troops in Algeria, Tunis, Morocco and the Levant. In Part I are shown, by means of tables and graphs, (1) the number of animals in the army by ages; (2) the incidence of disease among them according to the official classification; (3) the duration of illness and the percentage death rate in the hospitals and remount depots of the army, and (4) the total mortality rate in the 22 military districts. Further tables follow showing the cause of casting under various headings and the relationship of age to such losses.

Part II is devoted to a more detailed consideration of certain features of the more important diseases. Glanders was non-existent. The incidence of strangles is given as 4·59 per cent. with a death rate of 0·06 per cent. 111 cases of epizootic lymphangitis are recorded. There were 16 cases of ulcerative lymphangitis, 53 of tetanus, 57 of mange and 395 of ringworm. A special analysis is given of the casualties recorded under the general headings of digestive apparatus, locomotory apparatus, and wounds.—C. DAVENPORT.

—. (1936). Fonctionnement des services de l'Institut Pasteur pendant l'année 1935. **[Work of the Pasteur Institute [Tunis] during 1935].**—*Arch. Inst. Pasteur Tunis.* **25.** 329-350.

An account is given of the staffing and working of the institute. Anti-rabic treatment and serological, microscopic and other diagnostic examinations are undertaken. 139 such examinations were made on behalf of the veterinary services.

245 doses of anti-rabic vaccine for preventive use and 12 doses for curative use were supplied for the veterinary service, together with a considerable quantity of anti-anthrax and anti-distemper vaccines, various antisera and biological reagents.
—C. DAVENPORT.

I. MOROCCO. (1936). Rapport sur le fonctionnement du Laboratoire de Recherches du service de l'élevage du Maroc pendant l'année 1935. **[Report of the Veterinary Research Laboratory, Morocco, for 1935].** [VELU, H.]—*Arch. Inst. Pasteur Algér.* **14.** 72-83.

II. MOROCCO. (1936). Rapport sur le fonctionnement du Laboratoire de Recherches vétérinaires des Troupes du Maroc pendant l'année 1935. **[Report of the Military Veterinary Laboratory, Morocco, for 1935].** [VELU, H.]—*Rev. vét. milit.* **20.** 87-95.

The military veterinary laboratory in Morocco forms part of the larger veterinary research laboratory of the animal husbandry service. These two reports, which emanate from the latter, are by the same author, cover the same ground and are almost identical.

I. The scope of the work of the laboratory is first given. Then follows a short account of research work undertaken during the year as follows.

EQUINE INFECTIOUS ANAEMIA.—The disease does not occur naturally in the territory. Three suspected outbreaks proved on investigation to be cases of infectious paraplegia; it is said that a definite diagnosis was possible by the demonstration of the essential streptococcus. [Infectious equine paraplegia as an entity is not commonly recognized. Certain French authors—VELU et al. – *V. B.* **5.** 643.—have considered that the disease is caused by a streptococcus. Others —PHÉLOUKIS *V. B.* **5.** 578.—have suggested that it is due to a filtrable virus. There appears to be reason to doubt if the outbreaks reported were the same disease – see also *V. B.* **6.** 608 – the question of aetiology may reasonably be considered to be in doubt].

DOURINE.—Measures were adopted as proposed by EYRAUD to the Office international des Epizooties in 1934 [*V. B.* **4.** 720].

PIROPLASMOSIS.—543 animals were immunized with virus-vaccine. Experimental work with " gonacrine " was continued.

Contagious abortion, certain parasitic conditions, " darmous " (chronic fluorosis), anaesthesia by the intravenous route, and milk hygiene are then considered, but in less detail. The names and references of the papers published by the laboratory staff during the year in regard to various research items are distributed throughout the text.

II. This is the same as the foregoing, with the addition of a tabulated list of specimens examined on behalf of the army veterinary service and the biological reagents supplied for its use during the year.—C. DAVENPORT.

LEVANT. (1936). Rapport sur le fonctionnement du Laboratoire de Recherches du service vétérinaire des troupes du Levant pendant l'année 1935. [**Report of the Military Veterinary Laboratory for the Levant, 1935**]. [SOULIE].—*Rev. vet. milit.* **20.** 97-107. 4 tables.

The veterinary research laboratory in Syria serves a dual purpose, meeting the requirements of both the army veterinary and the civil veterinary services. This report covers the work undertaken during the year on behalf of both. It opens with a statement of research work carried out, and a classified list of specimens received for examination. Brief notes follow on the more important conditions dealt with under the following headings :– glanders, anthrax, rabies, mastitis and other pyogenic infections, septicaemic conditions, certain epizootic diseases of poultry, dourine, equine infection with a trypanosome as yet unidentified, of horses, piroplasmosis of all animals, leishmaniasis and epizootic lymphangitis. Five short addenda are included dealing with the following :– contagious pneumonia of goats, canine leishmaniasis, employment of an antimony preparation in the treatment of canine leishmaniasis, Botelho's test as applied to veterinary serology, and the production of dromedary and camel hybrids.—C. DAVENPORT.

BOOK REVIEWS.

SNYDER, L. H. (1935). **The Principles of Heredity.** pp. xiii + 385. 152 text figs., 1 fig. on 1 plate, 23 tables. [Numerous refs.] New York : D. C. Heath & Co. [8vo] [$3] [12s. 6d.]

The author states in the preface that this book is intended to be an introduction to the study of heredity for students and for general readers. At the end of each chapter problems are given which will, no doubt, prove useful to the teacher of the elementary classes.

The basic principles of heredity are clearly explained, but the chapters dealing with genetics as applied to domestic animals are, from the point of view of the veterinarian, too brief, and on the whole, disappointing. An interesting and up-to-date account of genetical features in rabbits is given, but the chapter dealing with the larger breeds of livestock is less satisfactory. Less than four pages are devoted to horses, and one or two of the statements are open to correction, *e.g.*, that hackney and shire horses are :– " The extremes of size and conformation in the horse ". Again, it is stated that " roaring . . . when not due to injury or poisoning, is the result of a dominant factor " ; no reference is made to the part played by other causes in the pathogenicity of this condition.

Cattle are referred to in several places, but the passages are disappointingly short, and deal with coat-colour, ear-notching and polling. Only a brief account of lethal factors is given. There is a useful chapter on " Selection and Inbreeding "

in which the practical value of progeny testing in dairy stock is pointed out. Poultry are fully dealt with, but little or no reference is made to sheep and pigs. As the book purports to cover " The Principles of Heredity " only, and not genetics as applied to the domestic animals, there is some excuse for these omissions.

There is an extremely useful chapter on the elementary statistical treatment of variation.

Taken as a whole, the book should be a useful reference volume for students and others generally interested. The subject matter is too elementary for specific interests, but the book should be of value as a compendium, additional to the text-book used. It is doubtful whether the " general reader " will be able to follow the chapter on the " Analysis of Human Family History ".

The book is well and clearly written, but the diction is definitely rather " popular " than scientific in many places. The illustrations are well chosen from a wide range of subject matter, but some of the photomicrographs, *e.g.*, 14, 16, etc., could have been reproduced better on art paper. The illustration of a bull-dog calf, fig. 38, is not typical, and the scientific reader might take exception to some of the legends, *e.g.*, that under fig. 10.—N. J. SCORGIE.

SCHÄPER, W. (1936). Konstitutionsforschung und Krankheitsbekämpfung in der Tierzucht. **[Research on Constitution and Disease Control in Animal Breeding]**. pp. 88. Berlin : Verlag Paul Parey. [8vo] [RM.4].

The author is a veterinarian on the staff of an animal breeding institute. The book breaks new ground and is written for the veterinarian – not for the geneticist.

The author defines constitution as " collective body composition " (gesamtkörperverfassung) and describes it as being formed by two factors – inborn characteristics and the influence of extrinsic forces (climate, nutrition, etc.).

The book is divided into two main parts – Part 1. Inherited Diseases and Malformations, and Part 2. The Role of " constitution " in the Incidence of Infectious and other Diseases. The literature on research on the breeding of disease-resistant animals is also reviewed.

In Part I inherited defects are dealt with systematically and a fairly complete list of those of the domestic animals is given.

Schäper is of the opinion that some of the common equine bone diseases are not hereditary, but he makes a bad mistake in citing osteodystrophic fibrosis of horses in the Philippines as an inherited disease, ignoring the work of KINTNER and HOLT, who proved it to be a nutritional disease. Other statements based on reports of other workers should in a like manner not be accepted as more than conjectural.

In Part 2 an attempt is made to account for the unknown factors influencing susceptibility to the important infectious diseases which have shown themselves uncontrollable by bacteriological methods alone – tuberculosis, bovine contagious abortion, streptococcal mastitis, sterility consequent upon bacterial infections, and diseases of new-born animals. Schäper draws attention to the evidence suggesting that heredity plays a part. Some of it is very convincing. The section on breeding experiments is of importance in this respect, some success having been achieved in producing families of mice, rats, fowls, etc., resistant to certain infections.

The author has done a great service in collecting information on this very important subject, and in giving an extensive reference list covering 12 pages. He represents the monograph as a preliminary work, and it is to be hoped that he will produce a second and larger edition in a few years' time.—J. E.